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Taxonomic notes on the tribe Callidiopini Lacordaire, 1869 (Coleoptera: Cerambycidae) and some other taxa of the Papuan Region, mainly from the Solomon Islands, with descriptions of five new species

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Abstract: Under the auspices of the responsible ministry of the government of Solomon Islands, a research project on the cerambycid fauna of the country was initiated in February 2019. Specimens of this family were collected on Guadalcanal Island. As a first step, the taxonomy and biogeography of the Callidiopini was observed. Four new species of the genus *Ceresium* Newman, 1842, i.e. *C. gracilipenne* sp. nov., *C. pulekerai* sp. nov., *C. hurutaraui* sp. nov., and *C. perplexum* sp. nov. are described. For comparative observation, one new species of the same genus, *C. mirabile* sp. nov., from New Guinea, is also described. Of the less-known genus *Dendrides* Dillon et Dillon, 1952, one new species, *D. solomonicus* sp. nov., is described. In addition, new distribution records of two known species, *C. diversum* (Pascoe, 1866) and *Oxymagis horni* (Heller, 1912), are recorded. Their genitalia and terminalia are described and illustrated in detail, in particular their endophalli with manifold ejaculatory duct complexes. When a male specimen is not available, female genitalia is described. Substantial taxonomic and biogeographical considerations beyond the description of the individual species are added in the discussion section.

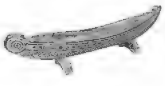
Key words: Cerambycidae, Papuan Region, *Ceresium*, *Oxymagis*, *Dendrides*, genitalia, ejaculatory duct complex.

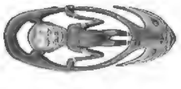
Introduction

In accordance with the agreement between the Ministry of Environment, Climate Change, Disaster Management & Meteorology (MECDM), Government of Solomon Islands, and the author of this publication, a research project was initiated in February 2019. The objective of the project is to study the taxonomy, biogeography and biology of cerambycid beetles in the Country of Solomon Islands. A number of field studies were already implemented within the framework. Cerambycid beetles were collected in Barana area on Guadalcanal Island by local partners as well as by the author himself. The new materials were subsequently classified and carefully examined. In the course of the examination, interesting facts were discovered and new observations recorded. These discoveries and observations will be described in a series of publications. As a first step, species of the tribe Callidiopini Lacordaire, 1869 are observed and described.

For taxonomic and biogeographical consideration, comparison with the species of adjacent regions is essential. In this case, the species of the other parts of the Papuan Region in *sensu lato*, as defined by Greķe & Telnov (2014), are most comparable. These subregions include the Papuan Region in *sensu stricto* (commonly: New Guinea), Bismarck Archipelago, Moluccas and a number of smaller islands. The species from these subregions are included in the scope. Further, Vanuatu, Fiji and Micronesia are also taken into consideration, as their species are often related, though to a lesser extent.

The tribe Callidiopini in this extensive region, as defined above, is fairly well explored. Early discoveries were documented in the classic literature by Fairmaire (1881; 1883), Schaufuss (1864) and Pascoe (1869). The knowledge was subsequently complemented by Heller (1912; 1914), Aurivillius (1927) and Matsushita (1935). Later, it was greatly supplemented by the comprehensive publications by both Dillon & Dillon (1952) and Gressitt (1951; 1956; 1959). In recent years, Vives, Aberlenc & Sudre (2008) as well as Waqa-Sakiti & Lingafelter (2009) and Waqa-Sakiti, Winder & Lingafelter (2015) made substantial contributions on this subject. Thus, 35 taxa of the tribe are already recorded from New Guinea,





nearly 22 from Micronesia and 21 from Fiji. For *Ceresium* Newman, 1842, the most prolific genus of the tribe, 12 taxa from New Guinea, 17 from Fiji and 16 from Micronesia are already known. They include endemic species and genera, unknown in the Oriental Region, often with remarkable characteristics.

In contrast, our knowledge of the tribe in the Solomon Islands proper is rather limited. Even though several works on Cerambycid beetles as a whole were already published, the Callidiopini was only sporadically referred to. Until recently, only two widely distributed species, *Tethionea tridentata* Pascoe, 1869 and *Ceresium unicolor* (Fabricius, 1787) were recorded, both from Malaita Island (Gressitt 1951). In recent years, Vives *et al*. (2008) recorded new distributions of *Ceresium pachymerum* (Pascoe, 1869), *Examnes philippensis* (Newman, 1842) and *Araespor gazellus* Gressitt, 1959 from Vanikoro, one of the smaller islands remote from the main part of the archipelago. Given the extensiveness of the region, composed of many larger islands, and its location adjacent to New Guinea, a more prolific fauna of the Callidiopini is to be expected. Obviously, more extensive exploration is necessary in the major part of the island group. This research project should be a contribution to compensate for such a deficiency.

The new material indeed includes several interesting taxa. Many essential anatomical and taxonomic aspects have thereby been revealed. Four hitherto unknown *Ceresium* species have been discovered. One new species of the rather enigmatic genus *Dendrides* Dillon et Dillon, 1952 has also been discovered. In addition, new distributions of two species have been recorded. Of the new species, *C. gracilipenne* sp. nov. probably belongs to a coherent group of atypical, small-sized species distributed in the Papuan and adjacent regions in Melanesia. *C. pulekerai* sp. nov. and *C. hurutaraui* sp. nov., especially the former, have genitalia and terminalia unique in the genus and the tribe. Likewise, both new species *C. perplexum* sp. nov. and *C. mirabile* sp. nov., resemble each other, and show peculiar characteristics hitherto unobserved in the genus. The latter, though collected in New Guinea, was also included in the observation. *Dendrides solomonicus* sp. nov. in turn is the second member of a poorly known genus whose tribal position is yet to be clarified. Finally, *C. diversum* (Pascoe, 1866) and *Oxymagis horni* (Heller, 1912), both newly recorded from Guadalcanal, Solomon Islands, have revealed remarkable morphologies. In view of the significance of these species and their newly discovered characteristics, they are described and illustrated in detail.

Regarding male genitalia and terminalia, their importance for the taxonomy of the Callidiopini was already noticed in previous publications (Yokoi 2019; Yokoi *et al*. 2019). In particular, the endophallus provides an essential character for classification. The male genitalia and terminalia were therefore carefully examined. The results are described and illustrated in particular detail below.

Female genitalia and terminalia are generally less indicative. However, they often reveal interesting observations for taxonomy (Yokoi 2019; Yokoi *et al*. 2019). When a male specimen is not available, female genitalia and terminalia are described. In this publication, 4 new species are compared in this regard. Differences in the structure of the 8th abdominal segment were observed, as well as similarities in other regards.

Finally, new observations and questions on higher taxonomy, beyond the description of individual species, should be more broadly discussed. These substantial aspects are added at the end.

Material and methods

The material for this publication is composed of specimens collected in Guadalcanal Island of the Solomon Islands Nation. One specimen from New Guinea was additionally included in the material. These specimens in question were either directly compared to the relevant holotypes, or to their original descriptions and images.

All labels are cited as in the originals, and are printed.

For the examination of genitalia, the specimens were softened first, then submerged in KOH solution for 12 hours and subsequently cleansed in water. They were photographed using a digital camera with a macro lens. Serial photos were stacked onto one image. Drawings were made using Adobe Illustrator. Median lobe, tegmen, 8th sternite and tergite were examined for each male specimen. Endophallus is observed in natura, i.e. in pre-copulative position in abdomen. Ejaculatory duct of endophallus, together with the surrounding manifold sclerites, referred to as "ejaculatory duct complex", was observed in particular detail. In general, the direction, to which the ejaculatory duct itself is pointed, is referred to as "apical", the side nearer to the duct likewise "dorsal". Additionally, when relevant, 9th sternites or tergites were examined. For female, 8th and

9th sternites and tergites, spermathecae, median oviducts and bursae copulatrix were examined. 8th and 9th abdominal segments are often included in “terminalia” in publications. However, they sometimes play significant roles in copulation, as indicated by their often elaborate structures of apical parts. They are thus often referred to as “external genitalia”. In this publication, 8th and 9th abdominal segments are included in the descriptions of genital organs. For the sake of simplicity and readability, “terminalia” is nonetheless used as a collective term. Usually, their external sides are observed and described, i.e., sternites in ventral view and tergites in dorsal view. The other sides are described when relevant. In addition, 7th abdominal segments are simultaneously observed when sensible.

The term of the “flying hairs” is used to describe widely spaced, free-standing, long, neither stout nor erect nor adpressed dorsal setae, which often are curved or sinuous, like thin hairs flying in wind. They are typical for some genera (for instance, *Stenodryas* Bates, 1873).

The holotypes and paratypes will be deposited in the National Museum of Nature and Science (NMNS), Tsukuba, Tokyo, Japan, where each type specimen will be labelled with a registration number. The numbers are given in the descriptions of the respective species below. Two paratypes of *Ceresium gracilipenne* sp. nov. will be temporarily preserved in the collection of the author for further comparative observation. The holotype of *Ceresium mirabile* sp. nov., from Indonesian New Guinea, will be preserved in the Indonesian Institute of Sciences (LIPI), Bogor, Indonesia.

Measurements were taken with an ocular micrometer. The abbreviations for the measurements in the descriptions are as follows:

EL – length of elytra;
EW – humeral width of elytra;
HW – head width across eyes;
M – arithmetic mean;
PA – apical width of pronotum;
PB – basal width of pronotum;
PL – length of pronotum;
PW – maximum width of pronotum;
TL – total length (from apical margin of clypeus to abdominal apex).

Abbreviations of material stores:

BMNH – The Natural History Museum (formerly British Museum, Natural History), London, United Kingdom;
CYY – Collection Yaheita Yokoi, Ratingen, Germany;
LIPI – Indonesian Institute of Sciences, Bogor, Indonesia;
MECDM – Ministry of Environment, Climate Change, Disaster Management, Meteorology, Government of Solomon Islands, Honiara, Solomon Islands;
NMNS – National Museum of Nature and Science, Tsukuba, Japan.

Results

Taxonomy

***Ceresium gracilipenne* sp. nov.** (Figs 1–23 & 149–151)

Holotype ♂ NSMT-I-C-200337: Solomon Is., Guadalcanal, Barana Village. 25-28.II.2019. Y.Yokoi leg.
Paratypes 3 specimens: 1♀ NSMT-I-C-200338: same data as holotype; 2♀ CYY: same data as holotype.
Remark: Antennae of the holo- and paratypes partly damaged; length estimated.

Derivatio nominis: The name of this species refers to its slender, evenly punctured elytra with maculation.

Diagnosis: Small-sized; slender. Head and pronotum finely reticulate. Pronotal sides evenly rounded. Elytra evenly punctured; with dark maculation.

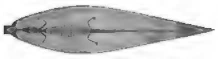
Measurements for holotype male: TL=7.1 mm; EL/EW=3.4; HW/PW=1.04; PL/PW=1.2; PA/PW=0.81; PB/PW=0.79. Paratype females: TL=4.8–7.9 mm; EL/EW=3.3–3.4 (M 3.3); HW/PW=0.96–1.08 (M 1.03); PL/PW=1.04–1.18 (M 1.10); PA/PW=0.84–0.88 (M 0.86); PB/PW=0.79–0.83 (M 0.8).

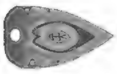
Description: Colour yellowish dark brown. Antennae, tarsi, tibiae, basal halves of femora paler. Elytral disc pale, with a dark horizontal maculation near apical 1/3. Setae yellowish to golden. Head (Figs 2–4): Nearly as broad as pronotum; universally reticulate; clothed with adpressed, well aligned hairs. Frons short, reverse-trapezoid; flattened; steep. Vertex nearly flattened. Eyes large, separated from one another by 1/4 the width of occiput or 5/6 of the upper eye-lobes. Antennal supports flattened. Antennae surpassing elytral apices by the last two articles in male and the last one in female. Scape subarcuate and moderately clavate; dorsum flattened and subreticulate. Antennomeres 3, 4, 5, 6 each 5/4, 9/10, 7/5, 7/5 as long as scape; the remaining articles gradually reducing in length. Pronotum (Figs 1–2): Longer than broad; sides evenly rounded. Surface finely reticulate, clothed with fine, adpressed hairs; additionally with a few longer flying hairs. Disc well rounded, with a diminutive nitid median stripe. The stripe rudimentary or invisible in two female paratypes. Scutellum bell-shaped; naked. Elytra: Slender; subparallel-sided; regularly with dense setiferous punctures; setae thereof fine, adpressed; punctures shallower toward apices. Sides slightly dilated toward apices in one female paratype. Legs: Rather slender. Femora clavate; moderately pedunculate in basal 1/4; flattened. Tibiae subarcuate. Venter (Fig. 5): Shiny. Prosternum very convex; with rather sparse setiferous punctures; setae thereof medium-length, curved, disorderly, pointing in different directions. Prosternal process compressed to a narrow strip between procoxae; emarginate at apex. Mesosternum convex; with regular large setiferous punctures; setae thereof stout, adpressed. Mesosternal process broad and flattened; densely, coarsely punctured; apex widely emarginated. Metasternum weakly dilated toward apex; nitid and shiny in middle; regularly and rather densely punctured elsewhere; setae as of mesosternum. Male abdomen: Much narrower than metasternum or elytra; with sparse shallow setiferous punctures; setae thereof short, curved; additionally clothed with several longer, flying hairs. Sternites 4–6 subequal in length; shorter than the 3rd. Sternite 7 subrectangular; clothed with several stout hairs near apex. Apex of 7th tergite broadly arcuate; hairs as on sternite. Female abdomen (Fig. 8): Sides strongly emarginated. Sternites subequal in length. 4th weakly, 5th moderately, 6th and 7th strongly flattened. 3rd subtrapezoidal; 4th subrectangular; 5th and 6th apically dilated; 7th broadest, subtrapezoidal with rounded sides. Male genital organs (Figs 6–7 & 12–23): Median lobe more than 2/5 the length of abdomen; bullet-shaped in dorsal view, weakly constricted near apex; in profile slender and arcuate; dorsal plate rounded at apex, dehiscent in basal 5/8; ventral plate longer than the dorsal, pointed at apex, dehiscent in basal 3/4. Crescent-like sclerites large and stout. Tegmen 7/10 as long as median lobe; in profile moderately arcuate. Parameres about 1/2 the length of tegmen; slender; apical 2/5 bilobed; lobes each clothed with several short apical setae. Ejaculatory duct complex large, nearly 2/5 as long as median lobe; with a prominent median cavity in dorsal view; apical part weakly sclerotized, dehiscent, hooked downward; basal sclerite slender, elongated. Terminalia (Figs 7 & 21–23): Blade of 8th sternite transverse; narrowed sublinear toward apex; apex emarginated in a bi-sinuate line, clothed with short, stout hairs; sides fringed with longer hairs; peduncle much shorter than blade. Tergite 8 narrower than the sternite; more sharply narrowed toward apex; apex simply emarginated; fringed with hairs of varying lengths. Female genital organs: (Figs 9–11 & 149–151). Sternite 8 with peduncle about 2/3 the length of abdomen; blade elongated-trapezoidal; latero-basal corners sharply produced; apex clothed with several stout setae; peduncle nearly three times as long as blade. Tergite 8 congruent with blade of the sternite. Abdominal segment 9 moderately long; coxite nearly as long as paraproct. Vaginal plates spatulate, arcuate, flattened. Bursa copulatrix contiguous to vagina. Spermatheca kidney-shaped; membrane near base thick, leathery.

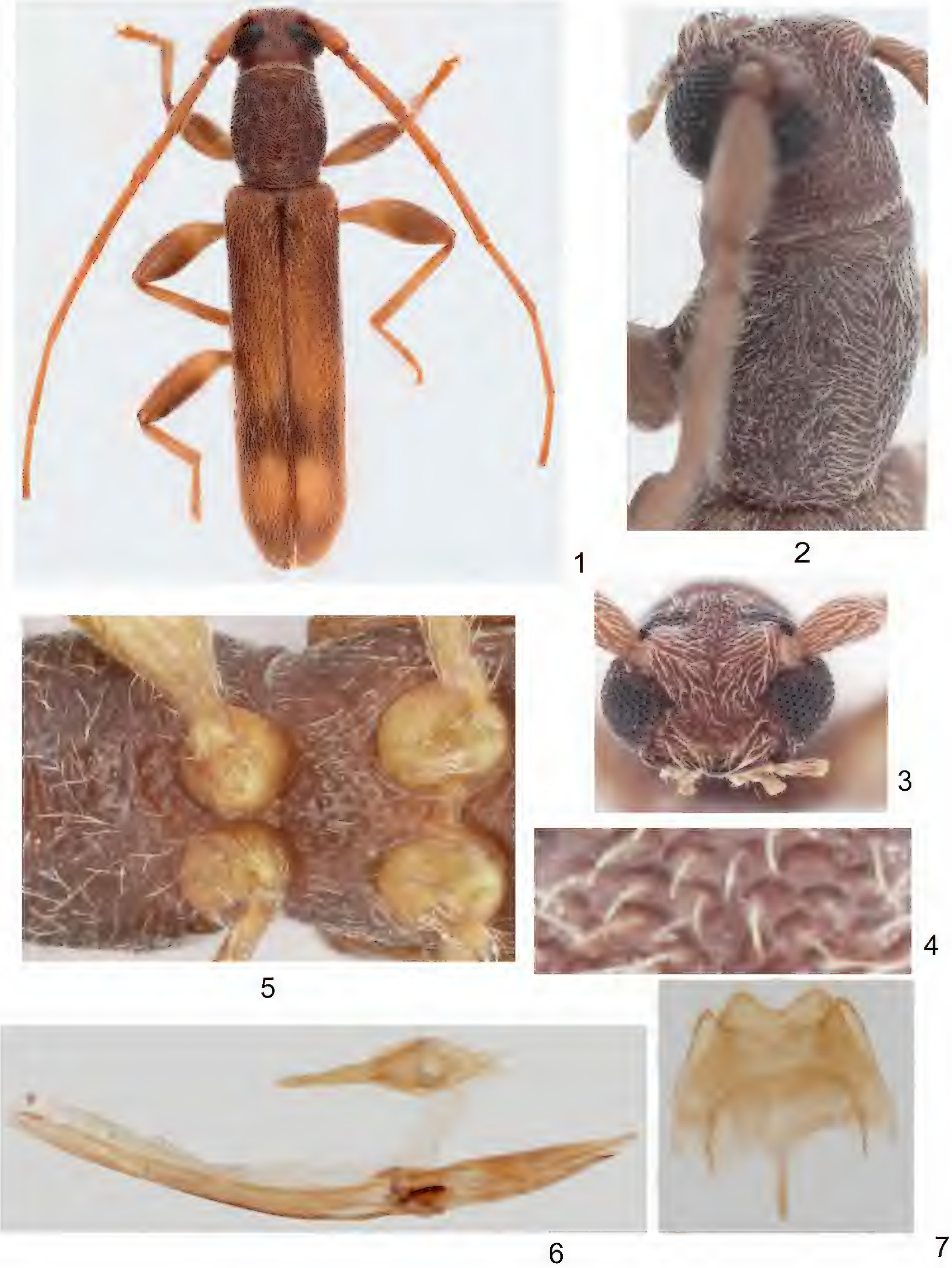
Differential diagnosis: With its very small and slender body, strongly compressed prosternal process and with several long flying hairs on pronotum and abdomen, this new species differs from the type species, *Ceresium raripilum* Newman, 1842. In fact, it is distinct from all the other members of *Ceresium* distributed in the Oriental Region. It is more similar to a group of smaller species from the Australian Region. These include *Ceresium gracillipes* Fairmaire, 1881, *C. decorum* Dillon et Dillon, 1952, and *C. promissum* Dillon et Dillon, 1952, all three from Fiji, and *Ceresium huedepohli* Yokoi, 2019 from the Philippines. The new species can be distinguished, however, above all by the reticulate surface of the head and pronotum as well as by the distinctive maculation on elytra. Its procoxae are subcontiguous, while those of *C. decorum*, *C. promissum*, *C. huedepohli* are variable, from adjacent to moderately separated.

As for the female abdomen, its strongly emarginated sides with dilated 6th–7th sternites are singular in the genus. Regarding male genitalia, the new species is rather ordinary. Ejaculatory duct complex of its endophallus is similarly sclerotized as in species of *Ceresium*, *Examnes* and *Stenodryas* (Yokoi 2019), indicating its fundamental affiliation with them. The cavity in the middle of the complex is peculiar but already observed in *Ceresium balkei* Yokoi, 2019. In contrast, its male terminalia is rather singular. The apical part of 8th sternite is distinctly broader than 8th tergite, with apical margin in an elaborate bi-sinuate line. The female genitalia manifest few deviations. Location of bursa copulatrix contiguous to vagina, basal thickening of spermatheca and shape of vaginal plates should be noted. So far as the external characteristics are concerned, it is also comparable to *Examnes dimorpha* Gressitt, 1951. The further taxonomical aspect of this observation is covered in “Discussion”.

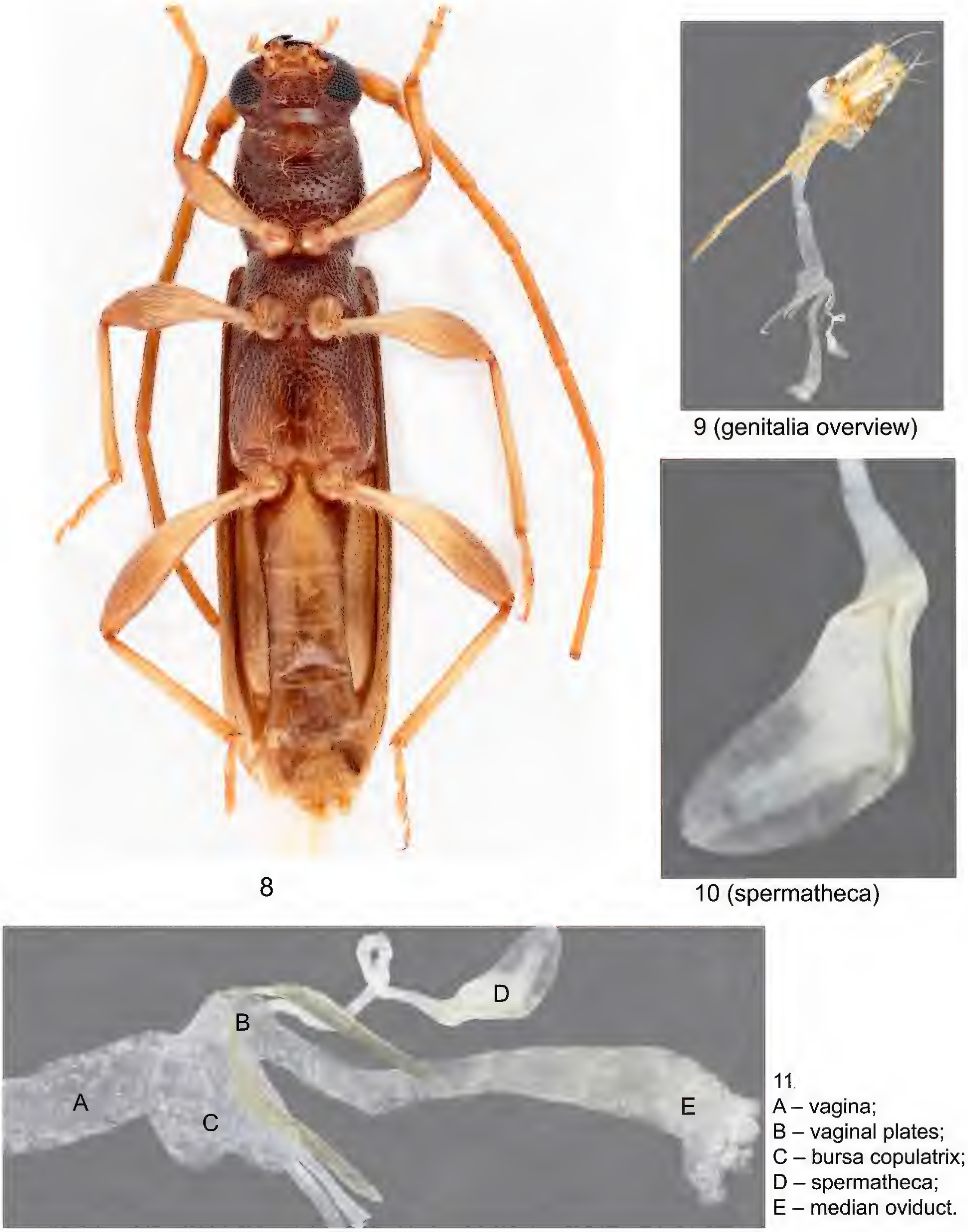
Distribution: Guadalcanal, Solomon Islands.







Figures 1–7. *Ceresium gracilipenne* sp. nov., holotype ♂. 1 – Habitus; 2 – Head and pronotum, lateral view, angled; 3 – Head, frontal view; 4 – Vertex, surface, enlarged; 5 – Pro- and mesosternum; 6 – Median lobe, lateral view, with ejaculatory duct complex; 7 – Sternite 8 with tergite in the background, ventral view [not to scale].



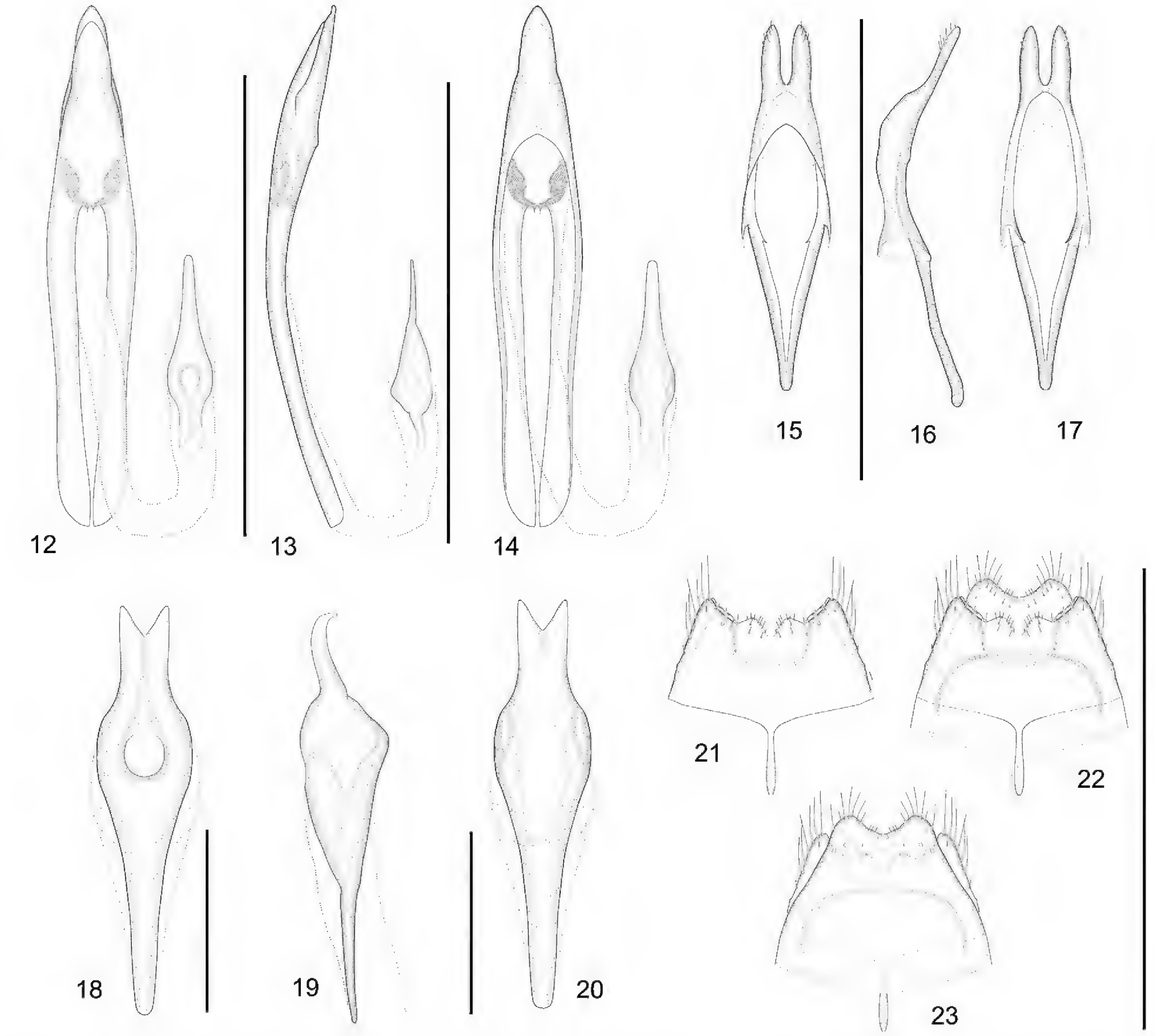
8

9 (genitalia overview)

10 (spermatheca)

11.
A – vagina;
B – vaginal plates;
C – bursa copulatrix;
D – spermatheca;
E – median oviduct.

Figures 8–11. *Ceresium gracilipenne* sp. nov., paratype ♀, habitus, ventral view (8) and genitalia (9–11) [not to scale].



Figures 12–23. *Ceresium gracilipenne* sp. nov., holotype ♂, genitalia and terminalia. 12 – Median lobe with endophallus, dorsal view; 13 – ditto, lateral; 14 – ditto, ventral; 15 – Tegmen, dorsal view; 16 – ditto, lateral; 17 – ditto, ventral; 18 – Ejaculatory duct complex; dorsal view; 19 – ditto, lateral; 20 – ditto, ventral; 21 – Sternite 8, ventral view; 22 – ditto, with 8th tergite in the background; 23 – Tergite 8 with sternite 8 in the background, dorsal view [scale bars for figures 18–20 – 0.2 mm, scale bars for figures 12–17 & 21–23 – 1 mm].

***Ceresium pulekerai* sp. nov.** (Figs 24–51)
Holotype ♂ NSMT-I-C-200339: Guadalcanal Is., Barana Village. April 2019. Local collector leg.

Derivatio nominis: The name of this species is dedicated to Mr. Veira Talitotu Pulekera of MECDM, Solomon Islands.

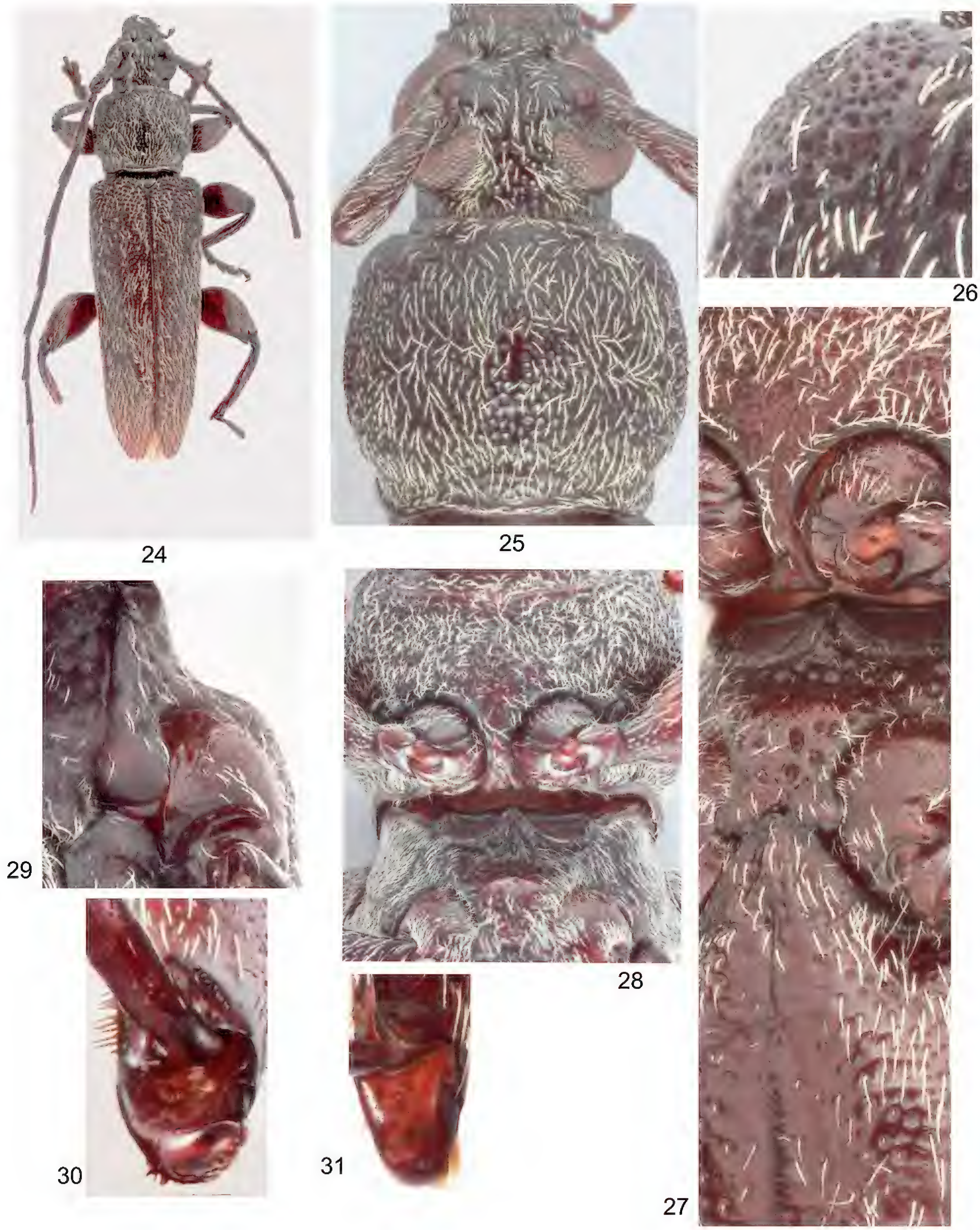
Diagnosis: Medium-sized; stout. Extensively black. Pronotum apically inflated; latero-apical corners minutely punctured. Median lobe extremely slender; apex of ventral plate produced in sagittiform. Ejaculatory duct complex exceptionally small.

Measurements: TL=16.5 mm; EL/EW=2.5; HW/PW=0.72; PL/PW=0.85; PA/PW=0.64; PB/PW=0.84.

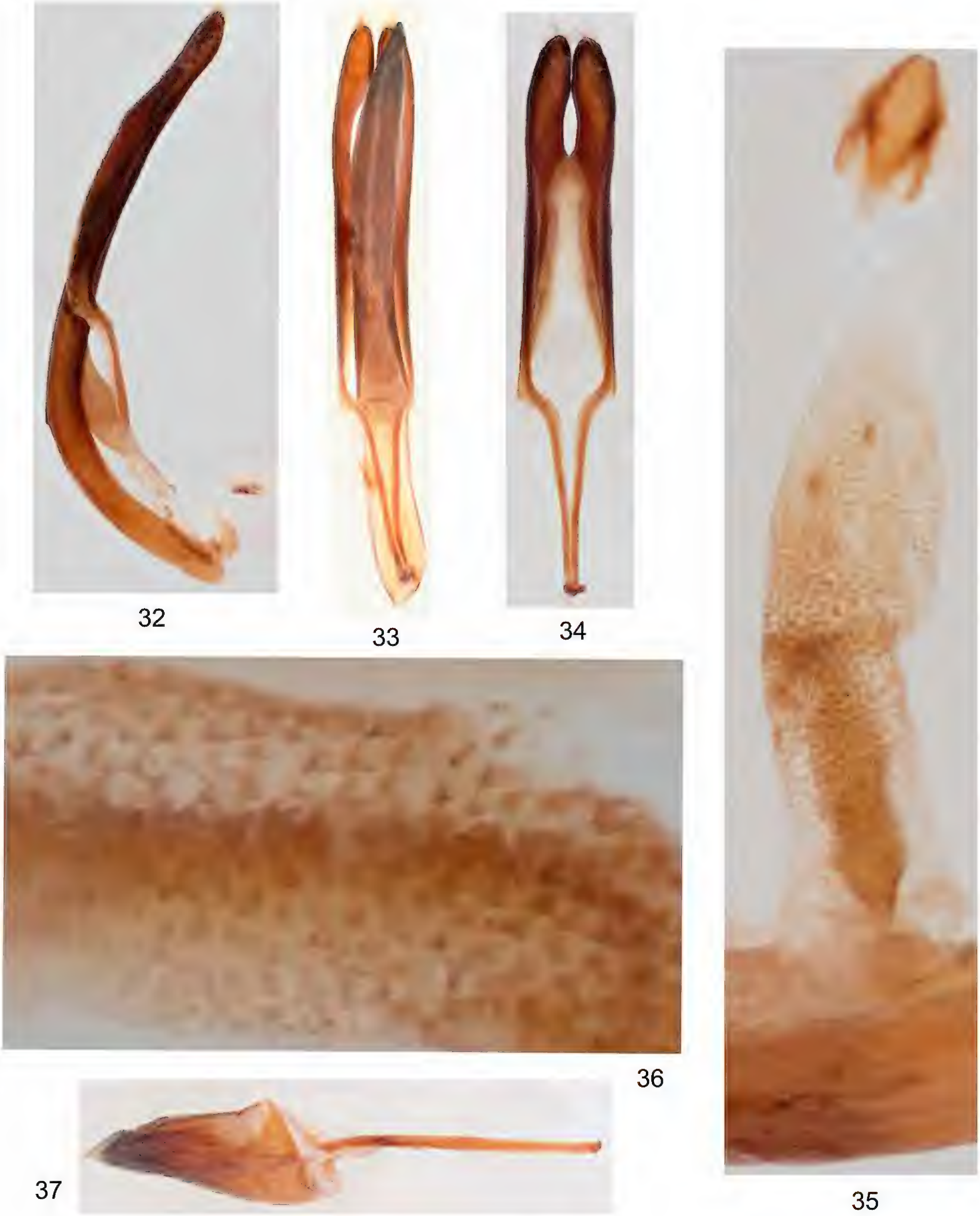
Description: Colour black; femora, venter and elytra reddish dark brown. Setae whitish. Head: Distinctly narrower than pronotum; glossy; sparsely clothed with short, stout, adpressed hairs; with a deep median furrow stretching from upper frons to occiput. Frons not steep, transversely depressed in middle, with several deep, coarse punctures; sides emarginated, each with a deep lateral cavity. Vertex moderately concave; with a row of setiferous punctures on each side of median furrow. Occiput with punctures of small to medium size. Eyes separated from one another by 4/11 the width of occiput or twice that of the upper eye-lobes. Antennal supports flattened; each subencircled by an arcuate row of diminutive setiferous punctures. Antennae reaching elytral apices by 10th antennomere. Antennomeres 3, 4, 5, 6 each 1/1, 5/6, 21/20, 21/20 as long as scape; the remaining articles gradually reducing in length; the last a little longer than the preceding. Scape subarcuate and moderately clavate. Pronotum (Fig. 25): Shiny; transverse; voluminous; strongly inflated in apical half; strongly constricted just before apex; apex thus narrower than base; sides unevenly rounded. Disc convex, well-rounded; with a minute, nitid median stripe; setiferous punctures dense; hairs thereof irregular, short, stout, adpressed, pointing in different directions. Punctures around the latero-apical corners diminutive; dense; not setiferous (Fig. 26). Scutellum bell-shaped; well bordered; with a large puncture in the apical middle; hairs as of pronotum. Elytra: Shiny; rather short; tapering toward apices, which are separately rounded. Punctures dense; setiferous; setae thereof stout, adpressed, pointing toward apices. Legs: Short and stout. Femora strongly clavate from base on. Tibiae arcuate; apically flattened and expanded; apices produced in spoon-shape, supplemented by a minute dent (Figs 30–31). Venter (Figs 27–29): Prosternum convex, well rounded, voluminous; with a horizontal costa subparallel to apical margin; densely and coarsely punctured; punctures laterally reducing in size; hairs denser, shorter than on pronotum. Prosternal process well bordered; shallowly punctured; apically rather steeply declivous; the apical middle thinned; apex weakly emarginated. Mesosternum saddle-shaped; steeply elevated toward the process; the middle with large punctures; sides clothed with short, adpressed hairs. Mesosternal process broad; flattened; with several large punctures; sparsely clothed with short, curved hairs; apex deeply emarginated. Metasternum well convex; the middle with large sparse punctures; sides subarcuate, clothed with short, stout hairs. Abdomen: Shiny. Hairs similar to those on metasternum; sparse in middle; dense on sides. Sternites 3-6 gradually decreasing in length and width. 7th sternite longer than the two preceding sternites; apical margin emarginated in a shallow though sharp bi-sinuate line. 7th tergite projected forward, surpassing the apex of 8th sternite; apical margin subspherically rounded, though sharply emarginated at middle. Male genital organs (Figs 32–36 & 38–47): Median lobe more than 5/8 the length of abdomen; elongated-bullet-shaped in dorsal view; extremely slender, the width less than 1/10 the length; in profile likewise slender, strongly arcuate; dorsal plate dehiscent in basal 1/3; ventral plate distinctly longer than the dorsal, dehiscent in basal 3/8, with apex strongly produced in sagittiform (Figs 41–42). Tegmen nearly as long as median lobe; in profile strongly curved in a bi-sinuate line; closely embracing the entire apical half of median lobe. Parameres about 3/5 the length of tegmen; subparallel-sided; apical 1/3 bilobed; lobes slender, apices each clothed with several short setae. Ejaculatory duct complex exceptionally small, only about 1/20 as long as median lobe; apical sclerite projected in horn-shape, thick, stout, curved upward; both lateral sclerites thick, spatulate; basal sclerite simply triangular in dorsal and ventral view. Membrane of endophallus thick, widely scaled (Figs 35–36). Terminalia (Figs 37 & 48–51): Blade of 8th sternite subsquarish, though sides arcuate; thinned in middle; latero-basal corners produced; apex and sides fringed with medium-length hairs; peduncle as long as blade, bifurcated near base. 8th tergite larger than blade of the sternite; bell-shaped; connected to the sternite with an extensive membrane structure; hairs similar to those of the sternite.

Differential diagnosis: The voluminous, apically inflated pronotum of this new species is peculiar among *Ceresium* species from the Australian Region. It resembles rather those of *C. vestigiale* Pascoe, 1866, *C. brevipes* Pic, 1943, *C. grandicolle* Holzschuh, 2015 or *C. ikuoyokoii* Yokoi, 2019 from the Oriental Region. Its surface and puncture are, however, clearly distinct. The diminutive puncture on the latero-apical corners has not been recorded before. Further, the apical structure of tibiae is rather remarkable in the genus. The male terminalia of the new species, as described above, is peculiar. Even more remarkable is its genitalia. The median lobe is not only strongly arcuate but also exceptionally slender. The sagittiform apical projection of the ventral plate has not been observed before in the genus. The elongated, subparallel-sided parameres of the tegmen are also unusual among the observed species. The mounting of tegmen on the median lobe is remarkable. As for the endophallus, its ejaculatory duct complex is of a type commonly observed in the genus *Ceresium*. It is, however, exceptionally small in relation to the median lobe. Additionally, the external surface of the endophallus is heavily scaled, which has not been observed to this extent in the genus.

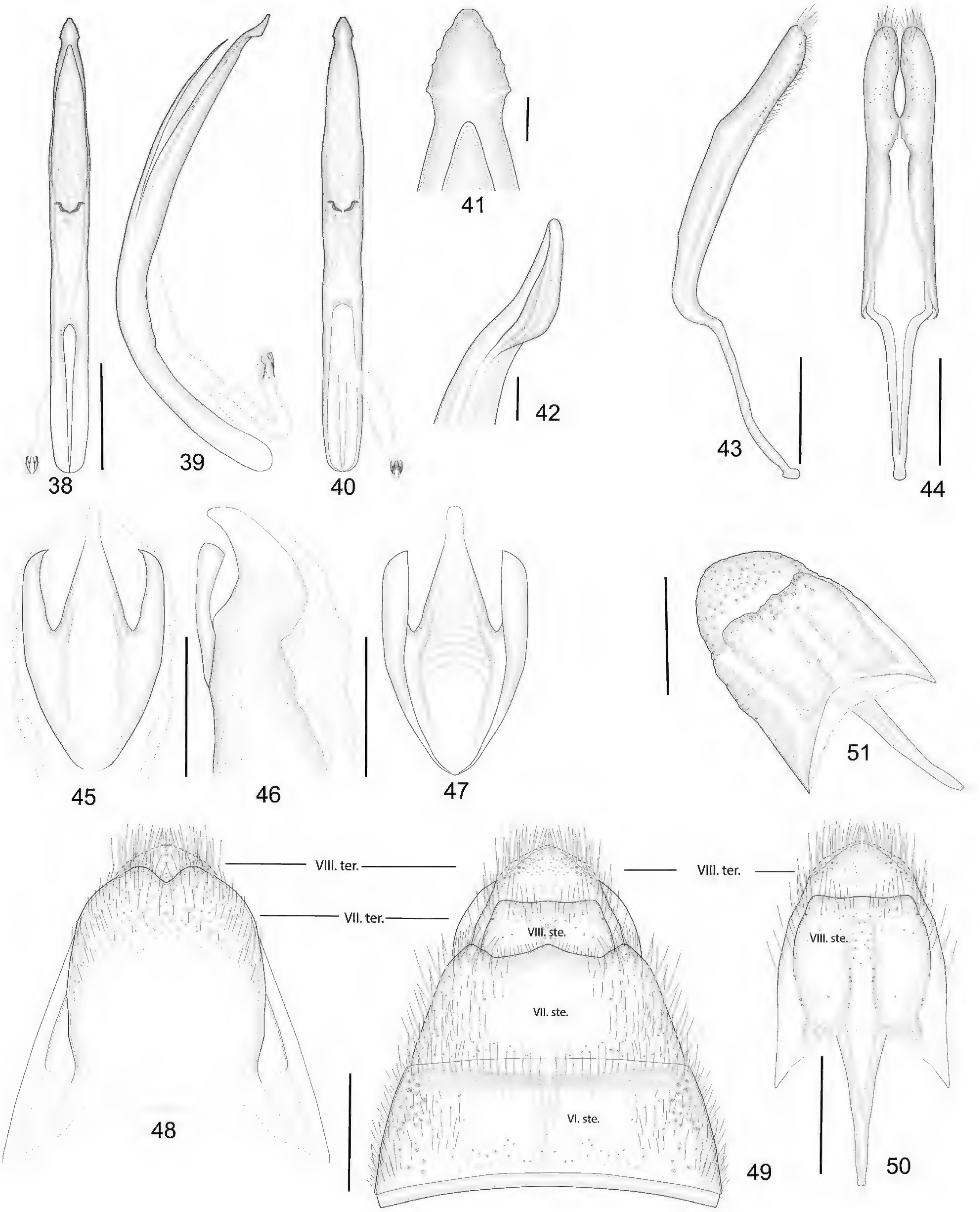
Distribution: Guadalcanal, Solomon Islands.



Figures 24–31. *Ceresium pulekerai* sp. nov., holotype ♂. 24 – Habitus; 25 – Head and pronotum; 26 – Pronotum, latero-apical corner; 27 – Venter; 28 – Pro-and mesosternum; 29 – Mesosternum, lateral view; 30 – Apical projection of mid-tibia, frontal view; 31 – ditto, different angle [not to scale].



Figures 32–37. *Ceresium pulekerai* sp. nov., holotype ♂, genitalia and terminalia. 32 – Median lobe with tegmen, in natura, lateral view; 33 – ditto, opened, ventral view; 34 – Tegmen, ventral view; 35 – Endophallus; 36 – ditto, surface, part; 37 – Sternite and tergite 8, lateral view [not to scale].



Figures 38–51. *Ceresium pulekerai* sp. nov., holotype ♂, genitalia and terminalia. 38 – Median lobe with endophallus, dorsal view; 39 – ditto, lateral; 40 – ditto, ventral; 41 – Apex of median lobe, dorsal view; 42 – ditto, lateral; 43 – Tegmen, lateral view; 44 – ditto, dorsal; 45 – Ejaculatory duct complex, dorsal view; 46 – ditto, lateral; 47 – ditto, ventral; 48 – Tergites 7–8, dorsal view; 49 – Sternites 6–8 and tergites 7–8, ventral view; 50 – Sternite and tergite 8, ventral view; 51 – ditto, latero-ventral, setae removed [scale bars for figures 45–47 – 0.1 mm, for figures 38–44 & 48–51 – 1 mm].

***Ceresium hurutaraui* sp. nov.** (Figs 52–65)
Holotype ♂ NSMT-I-C-200340: Guadalcanal Is., Barana Village. February-March 2020. Local collector leg.

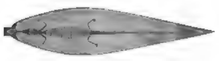
Derivatio nominis: The name of this species is dedicated to Mr. Joseph Hurutarau of MECDM, Solomon Islands.

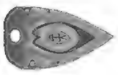
Diagnosis: Small-sized. Uniform brown in colour. Setae on pronotum very stout, curved, pointing in different directions. Elytra short. Punctures on mesosternum exceptionally large. Outlines of 8th sternite and tergite congruent. Ejaculatory duct complex large relative to median lobe.

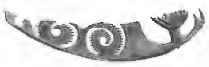
Measurements: TL=7.0 mm; EL/EW=2.5; HW/PW=0.88; PL/PW=1.08; PA/PW=0.74; PB/PW=0.84.

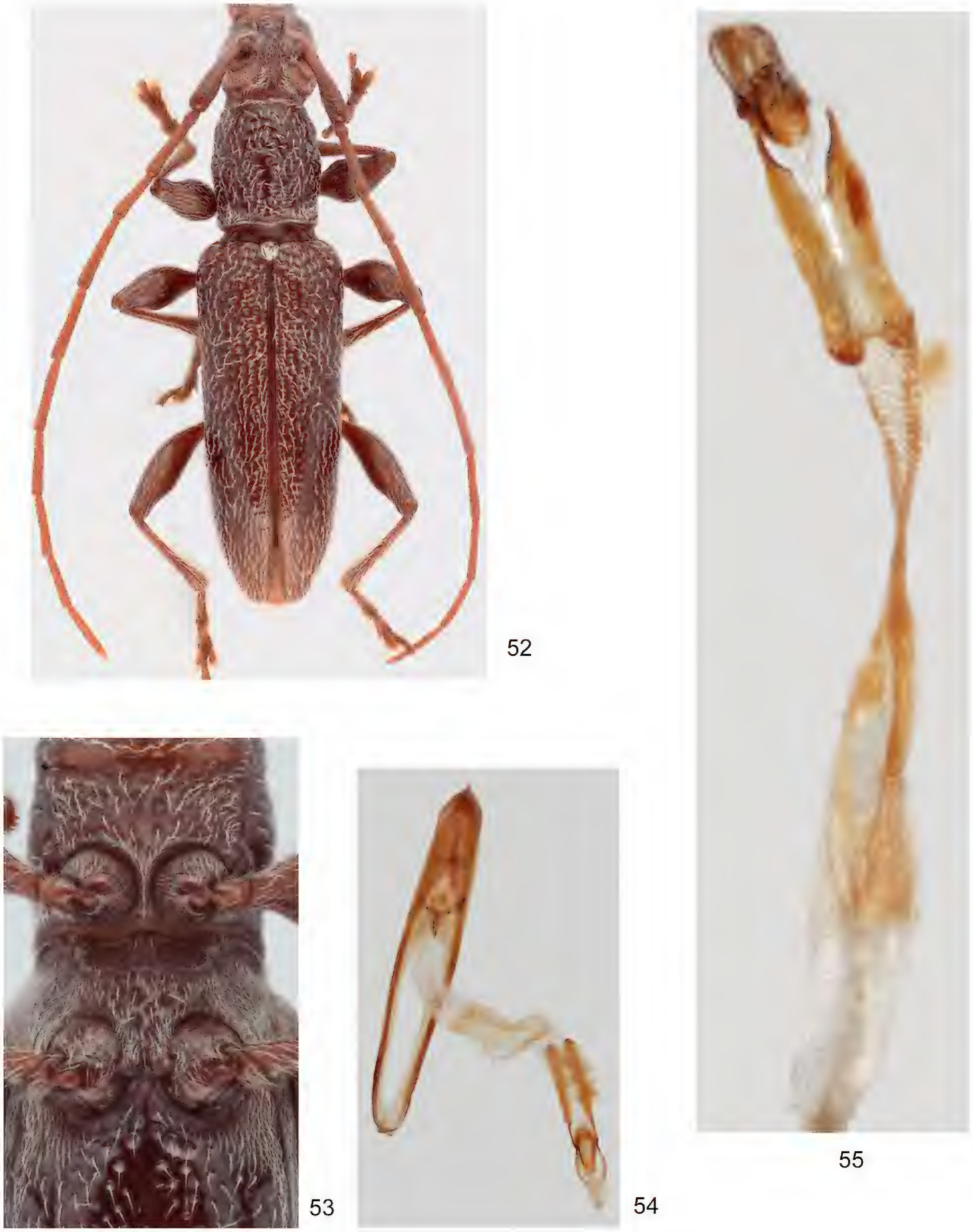
Description: Colour uniformly dark brown; elytra a little paler. Setae whitish. Head: Narrower than pronotum, glossy. Frons not steep; coarsely punctured; sparsely clothed with scattered short, stout, adpressed hairs pointing in different directions; sides deeply emarginated, strongly declivous. Vertex widely, deeply concave, with a deep median furrow; with a few large, deep, setiferous punctures on each side of the furrow. Occiput with several large punctures near vertex; fringed with short hairs along the upper eye-lobes. Eyes separated from one another by 1/4 the width of occiput or 5/4 of the upper eye-lobes. Antennal supports flattened; each subencircled by an arcuate row of diminutive setiferous punctures. Antennae surpassing elytral apices by 11th antennomere. Scape elongated, clavate, arcuate; finely and shallowly punctured. Antennomeres 3, 4, 5, 6, 7 each 7/8, 5/8, 1/1, 1/1, 7/8 as long as scape; the remaining articles gradually reducing in length; the last a little longer than the preceding. Pronotum: Longer than broad; constricted just before apex; apex narrower than base; sides evenly, weakly rounded. Surface shiny; with uniform and rather dense large, setiferous punctures; setae thereof short, stout, curved, scattered, pointing in different directions. Disc with an irregular, nitid median stripe stretching from basal 1/5 to the middle. Scutellum bell-shaped; thickly clothed with adpressed hairs. Elytra: Short; tapering toward apices, which are separately rounded. Shiny. Punctures large, setiferous; setae thereof stout, curved, pointing in different directions; apical punctures smaller; apical hairs finer, more aligned. Legs: Short and stout; femora clavate from base on. Venter: Prosternum subparallel-sided; the middle with large sparse setiferous punctures; setae thereof stout, curved, pointing to the process; sides with denser, smaller punctures bearing shorter hairs. Prosternal process narrow; well bordered; clothed with fine, adpressed hairs; moderately declivous toward apex; apex weakly emarginated, thinned in middle. Mesosternum elevated; the middle with several extraordinarily large setiferous punctures, setae thereof stout, curved; sides thickly clothed with fine, adpressed hairs. Mesosternal process broad; with a few smaller punctures; sides clothed with short adpressed hairs; apex thickly bordered, deeply emarginated. Metasternum apically subdilated; shiny; the basal middle with several large, setiferous punctures each bearing a stout, curved seta; punctures elsewhere sparse, smaller; sides densely clothed with adpressed hairs. Abdomen: Sides gradually tapering toward apices. Sternites 3-6 shiny; with small sparse setiferous punctures; setae thereof short, stout, curved. Sternites 4, 5, 6, 7 each 1/2, 1/3, 1/3, 1/2 as long as the 3rd. The 7th trapezoidal; apex feebly emarginate, fringed with short hairs. Male genital organs (Figs 54–63): Median lobe large in relation, nearly 3/5 as long as abdomen; fusiform in dorsal view; in profile strongly arcuate; dorsal plate dehiscent in basal 11/20; ventral plate distinctly longer, with apex a little produced to form a tooth; dehiscent in basal 3/4. Tegmen 8/9 as long as median lobe; moderately arcuate in profile. Parameres nearly 1/2 the length of tegmen; weakly tapering toward apices; apical 3/10 bilobed. Lobes slender; apices with several long hairs; sides and underside clothed with short setae. Ejaculatory duct complex large, nearly 1/2 as long as median lobe; intricate in structure. Apical sclerite elongated; subparallel-sided; bilobed. Both lobes spatulate, apically rounded in spoon-shape, inter-connected to each other with a thick membrane. Ejaculatory duct visible between the lobes. Both lateral sclerites slender. Basal sclerite linguate in ventral view; in profile thick and arcuate; supplemented by a weakly sclerotized ventral projection. Membrane of endophallus thickened and scaly in apical 1/2; scales large in apical 1/5, diminutive from apical 1/5 to 1/2. Terminalia (Figs 64–65): Blade of 8th sternite subcircularly rounded in the apical half, though truncated on apex; the middle narrowly thinned; latero-basal corners extended; apex and sides fringed with setae of varying lengths; peduncle 7/10 as long as blade. Tergite 8 congruent to blade of sternite in apical 3/4; hairs similar to those of the sternite.

Differential diagnosis: This new species can be distinguished from the others by the combination of its universally brown coloration, small though stout body, short elytra, coarsely punctured pronotum,





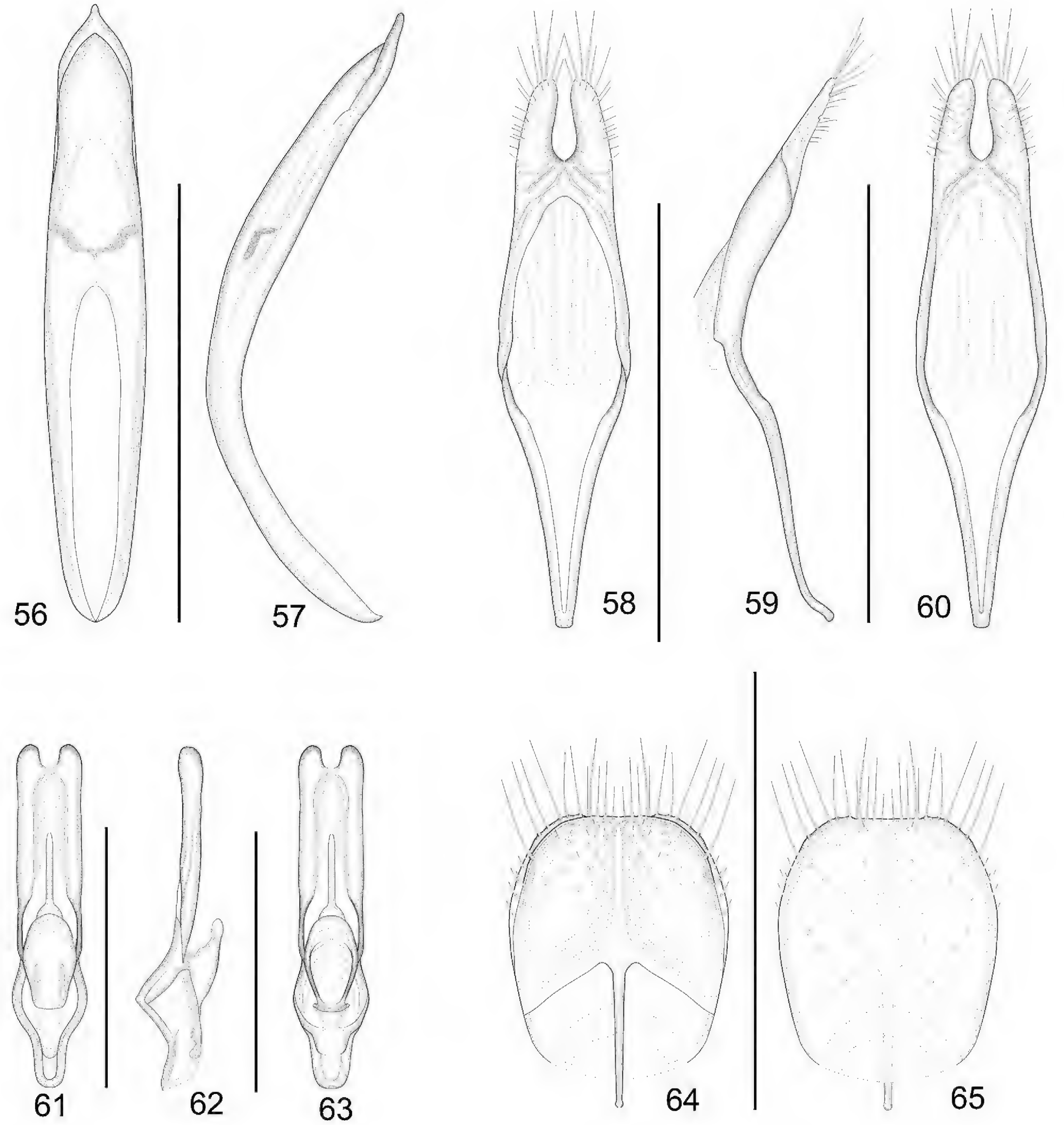




Figures 52–55. *Ceresium hurutaraui* sp. nov., holotype ♂. 52 – Habitus, dorsal view; 53 – Venter; 54 – Median lobe, dorsal view, with ejaculatory duct complex in ventral view; 55 – Endophallus with ejaculatory duct complex, dorsal view [not to scale].

disorderly hairs on elytra and large punctures on mesosternum. In the male genitalia, the ejaculatory duct complex of the new species, in relation to the median lobe, is one of the largest in the genus. It is, for example, relatively 10 times longer than that of the above described *C. pulekerai* sp. nov. Its structure is also one of the most intricate among the hitherto observed species, whereas the ejaculatory duct itself is openly visible. In addition, the membrane surface of its endophallus is thickened and scaly as in the above described *C. pulekerai* sp. nov., though to a lesser extent. Regarding male terminalia, the congruent outlines of the 8th sternite and tergite overlapping each other is noteworthy.

Distribution: Guadalcanal, Solomon Islands.



Figures 56–65. *Ceresium hurutaraui* sp. nov., holotype ♂, genitalia and terminalia. 56 – Median lobe, dorsal view; 57 – ditto, lateral view; 58 – Tegmen, dorsal view; 59 – ditto, lateral view; 60 – ditto, ventral; 61 – Ejaculatory duct complex, dorsal view; 62 – ditto, lateral view; 63 – ditto, ventral view; 64 – Sternite 8, ventral view; 65 – Tergite 8, dorsal view [scale bars for figures 61–63 – 0.5 mm, for figures 56–60 & 64–65 – 1mm].

***Ceresium perplexum* sp. nov.** (Figs 66–71, 146 & 152–153)

Holotype ♀ NSMT-I-C-200341: Solomon Is., Guadalcanal, Barana Village. 25-28. II. 2019. Y. Yokoi leg.

Remark: Antennae of the holotype partly damaged; length is estimated.

Derivatio nominis: The name of this species refers to its peculiar appearance.

Diagnosis: Yellowish pale brown; parts of legs and antennae pitchy black. Pronotum glossy; subtrapezoidal; sides bi-sinuate. Legs slender.

Measurements: TL=12.4 mm; EL/EW=2.9; HW/PW=0.9; PL/PW=1.16; PA/PW=0.81; PB/PW=1.0.

Description: Colour yellowish pale brown. Of the antennal articles, apical 1/2 of the 3rd pitchy black; total of 4–6 pitchy black; apical 1/4 of 7th blackish; total of 8–9 blackish. Of the legs, apical 1/4 of femora, basal 1/5 and apical 1/6 of tibiae pitchy black; apices of 1st and 2nd tarsal segments as well as the whole 3rd segment pitchy black. Setae pale yellowish. Head: Narrower than pronotum; glossy; sparsely, coarsely punctured. Frons not steep; the middle transversely depressed; sides emarginated, each with a deep lateral cavity. Vertex broad, flattened; with a deep median furrow stretching to frons. Eyes relatively small, separated from one another by 2/5 the width of occiput or twice the width of upper eye-lobes. Antennal supports broad, markedly flattened; each bordered by an arcuate row of deep, coarse punctures and, additionally, by minute, curved hairs. Antennae surpassing elytral apices by the last article. Antennomeres 3, 4, 5, 6 each 11/10, 4/5, 4/3, 4/3 as long as scape; 7–9 each a little shorter than 6th. Scape subarcuate and moderately clavate; with minute, shallow punctures. Pronotum (Fig. 68): Elongated-subtrapezoidal in dorsal view; narrowest at apex and broadest at base. Sides feebly tapering in a bi-sinuate line toward apices; constricted just before apices; uneven with a few protuberances and depressions, with several coarse punctures. Disc somewhat elevated, rounded; glossy; with several very shallow punctures. Scutellum subtriangular; well-bordered; with several diminutive setiferous punctures. Elytra: moderate in length; feebly tapering toward apical 4/5, then arcuate; separately rounded at apex; disc flattened; regularly punctured; sides and apices clothed with diminutive, adpressed hairs. Legs: Rather slender. Femora moderately clavate; mid and hind femora pedunculate in basal 1/3; fore femora in about 1/5. Venter (Figs 67, 69–71): Glossy; more or less clothed with diminutive hairs. Prosternum transverse and subrectangular in ventral view; convex in the middle; the middle with sparse setiferous punctures; setae thereof longer. Prosternal process narrow, well bordered; with several shallow punctures and diminutive hairs; apically rather steeply declivous; apex subtruncated. Mesosternum saddle-shaped; steeply elevated toward the process; steeply declivous on sides; with sporadic large coarse punctures. Mesosternal process broad, flattened; integument as of prosternal process; apically bilobed; apex contiguous at the same level to the basal projection of metasternum (Fig. 71). Metasternum twice as long as mesosternum; subparallel-sided; impressed along median furrow; rugose near the basal projection; sparsely punctured in middle. Abdomen: Glossy, impunctate; rather sparsely clothed with short hairs. Sternites gradually reducing in length and width toward apex. Sternite 7 strongly narrowed toward apex, which is widely rounded. Female genital organs (Figs 146 & 152–153): Blade of 8th sternite squarish; fringed with apical hairs; peduncle about 5/2 as long as blade. Base of 8th tergite widely emarginated. Abdominal segment 9 short; coxite as long as paraproct. Vaginal plates near median oviduct arcuate; spatulate. Bursa copulatrix large; oval to subspherical; connected to the apical vagina by a thick tube. Spermatheca kidney-shaped; membrane near base and apex thick, leathery; connected to bursa copulatrix by a long, winding duct; spermathecal gland visible as a smaller sack, connected to spermatheca by a short vessel.

Differential diagnosis: The new species is peculiar, with its glossy, impunctate, subtrapezoidal pronotum. The coloration of the legs and antennae is also unusual for a *Ceresium* species. The pattern of coloration is somewhat reminiscent of *Ceresium sibuyanum* Yokoi, 2019. However, it obviously differs in other essential aspects. These peculiar characteristics distinguish the new species from other species of *Ceresium* and related genera.

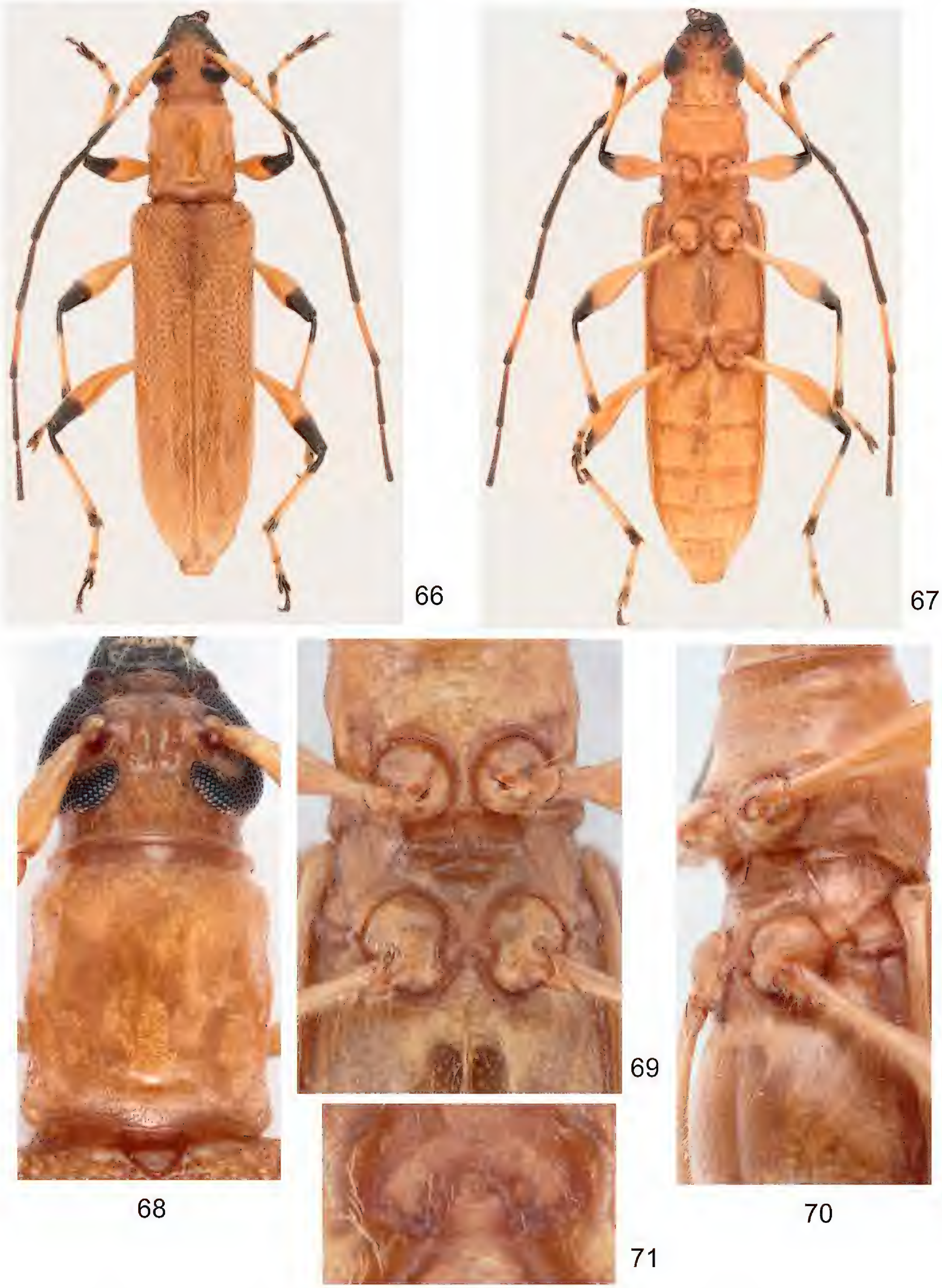
Distribution: Guadalcanal, Solomon Islands.

***Ceresium mirabile* sp. nov.** (Figs 72–78, 147 & 154–155)

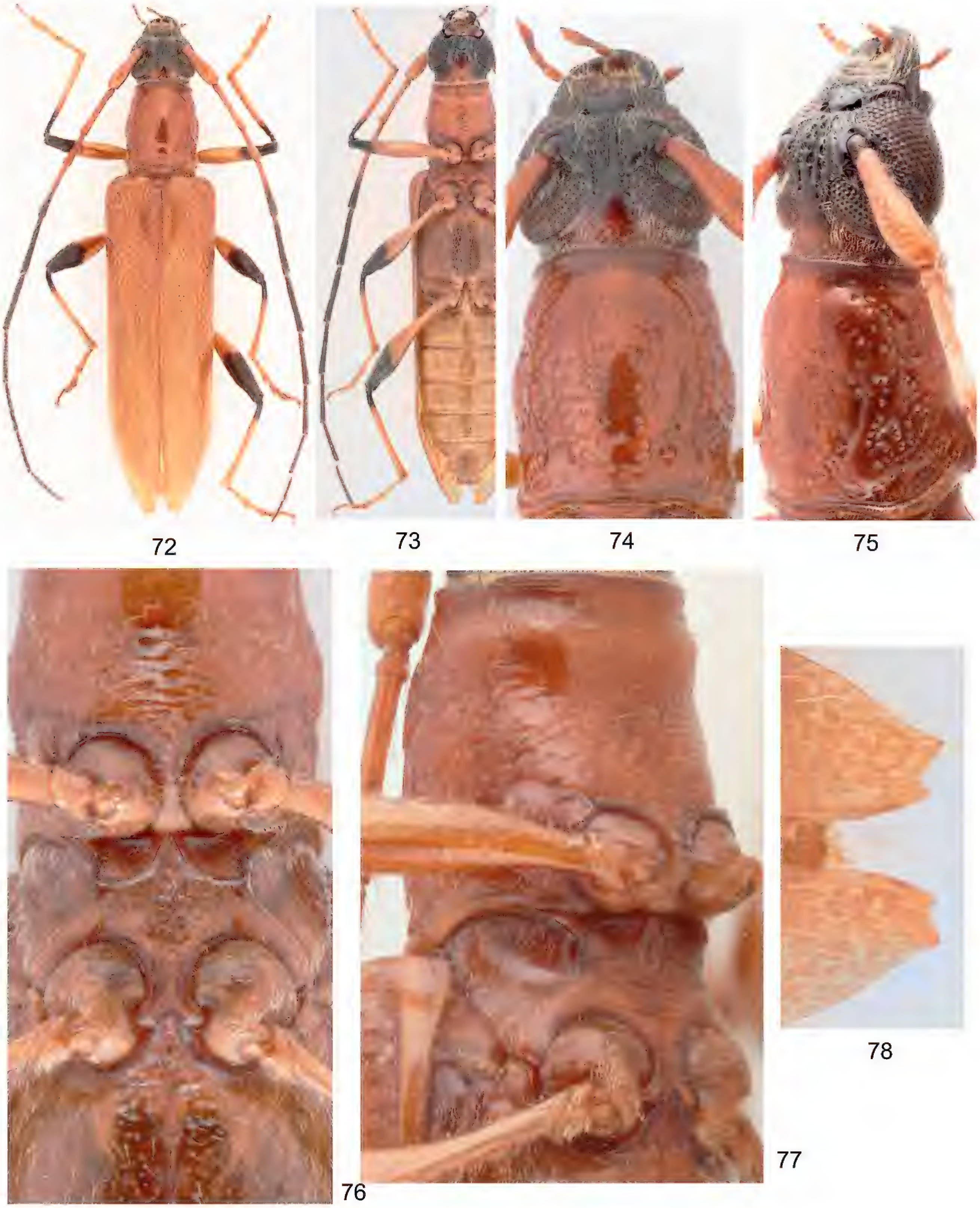
Holotype ♀ LIPI: Indonesia, W. Papua, Arfak Mts., 1190 m alt., Duebei Env. 21. 1-8. II. 2008. 20 km S. of Warmere, Manokwari distr. Local collector leg.

Derivatio nominis: The name of this species refers to its remarkable appearance.

Diagnosis: Resembles *Ceresium perplexum* sp. nov. at a first glance. Pronotum punctate. Elytral



Figures 66–71. *Ceresium perplexum* sp. nov., holotype ♀. 66 – Habitus, dorsal view; 67 – ditto, ventral view; 68 – Head and pronotum; 69 – Pro- and mesosternum; 70 – Pro-, meso- and metasternum, lateral view; 71 – Mesosternal process, apex [not to scale].



Figures 72–78. *Ceresium mirabile* sp. nov., holotype ♀. 72 – Habitus, dorsal view; 73 – ditto, ventral view; 74 – Head and pronotum; 75 – ditto, lateral view; 76 – Pro- and mesosternum; 77 – ditto, lateral view; 78 – Elytral apices [not to scale].

apices emarginated, bi-dentate. Legs more slender; partly keeled.

Measurements: TL=13.9 mm; EL/EW=3.1; HW/PW=0.9; PL/PW=1.16; PA/PW=0.77; PB/PW=0.97.

Description: Colour reddish brown; abdomen and elytra apically paler. Head black. Apical half of the 5th antennomere and the subsequent articles black. Apical 1/4–1/3 of femora and basal 1/6–1/5 of tibiae pitchy black. Setae pale yellowish to golden. Head: Analogous to that of *C. perplexum* sp. nov. Frons narrower; more strongly emarginated on sides. Vertex narrower, more concave; punctures more regular. Upper eyes more adjacent to each other, separated from one another by 1/4 the width of occiput or 5/4 the width of upper eye-lobes. Occiput with small to medium-sized punctures near upper eye-lobes. Antennae more slender, surpassing elytral apices by the last article. Antennomere three as long as scape; antennomere 4 about 2/3 as long; 5–8 each 11/10 as long; the subsequent articles gradually attenuating. Scape a little more slender. Pronotum: Longer than broad; apex narrower than base, broadest at middle. Sides uneven with a few swellings and depressions; with irregular large punctures; apical half weakly tapering toward apex. Disc glossy; with a nitid, clavate median elevation in basal 1/3; with rather irregular small setiferous punctures around there; setae thereof diminutive. Scutellum similar to that of *C. perplexum* sp. nov. Elytra: A little longer than that of *C. perplexum* sp. nov.; subparallel-sided in basal 3/4, then tapering to apices. Apices each emarginate; bi-dentate; outer tooth more prominent than the inner. Punctures on disc smaller and more regular than in *C. perplexum* sp. nov. Setae similar to those of *C. perplexum* sp. nov. Legs: More slender and longer than in *C. perplexum* sp. nov. Fore femora only feebly clavate. Tibiae and peduncles of femora keeled. Venter: Similar to that of *C. perplexum* sp. nov. Prosternal surface substrigate. Mesosternum broadly saddle-shaped; coarsely rugose in middle. Abdomen similar to that of *C. perplexum* sp. nov. Female genital organs: (Figs 147 & 154–155). Similar to those of *C. perplexum* sp. nov. Blades of 8th sternite elongated-reversed-trapezoidal; apex fringed with medium-length hairs; peduncle twice as long as blades. Tergite 8 similarly formed as blade of the sternite.

Differential diagnosis: This new species from Papua New Guinea shares many essential characteristics with the above described *C. perplexum* sp. nov. from Solomon Is. However, it can be easily distinguished, first by the apically narrower pronotum with punctate surface; second by the emarginate elytral apices and third by the more slender legs. It additionally differs in such details as keeled legs or different colouration of antennae. In the female genitalia, no substantial difference was observed. In contrast, it differs obviously from *C. perplexum* sp. nov. in the female terminalia, in particular the 8th sternite and tergite.

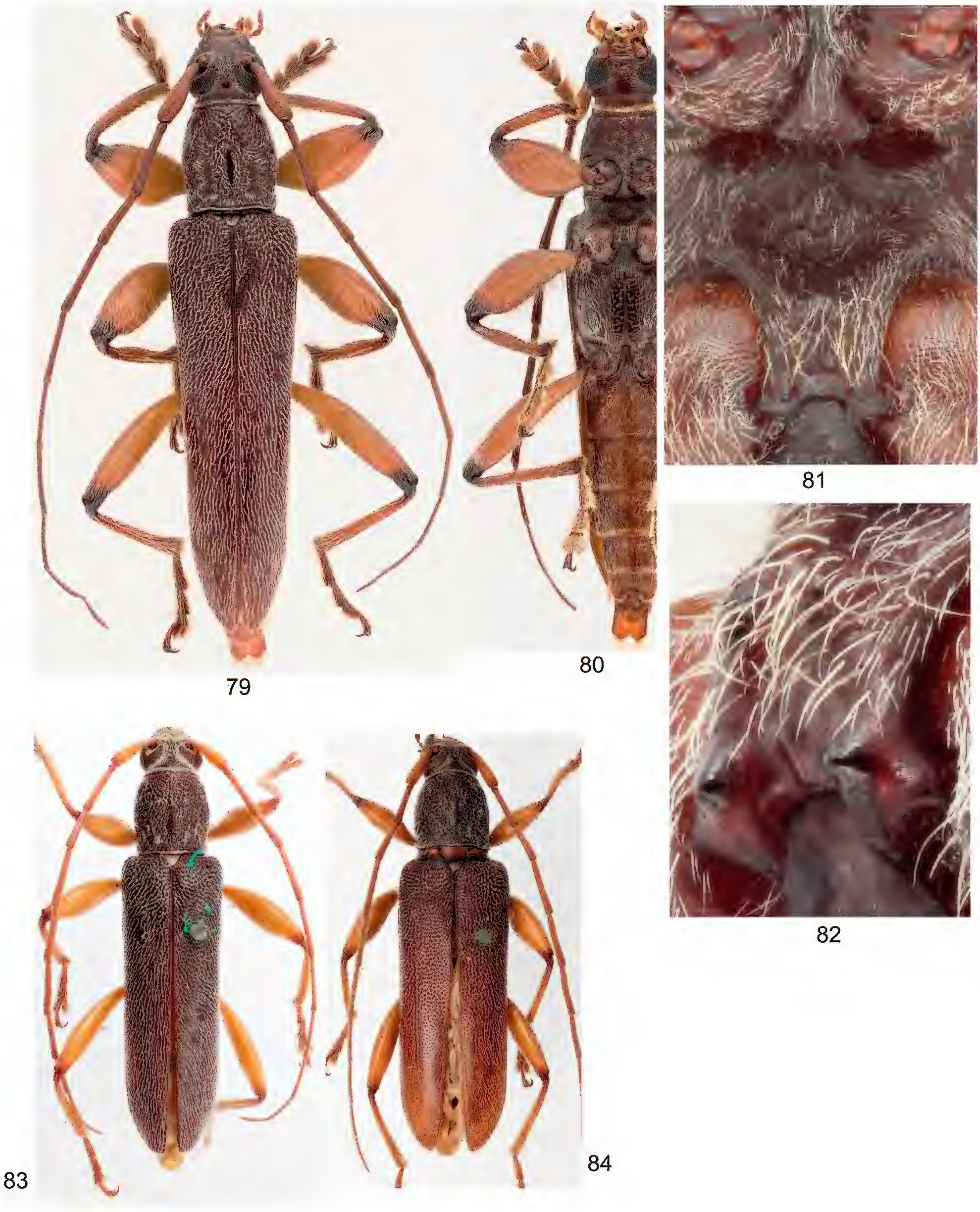
Distribution: Indonesia, West New Guinea, Doberai Peninsula.

Ceresium diversum **(Pascoe, 1869)** (Figs 79–106)

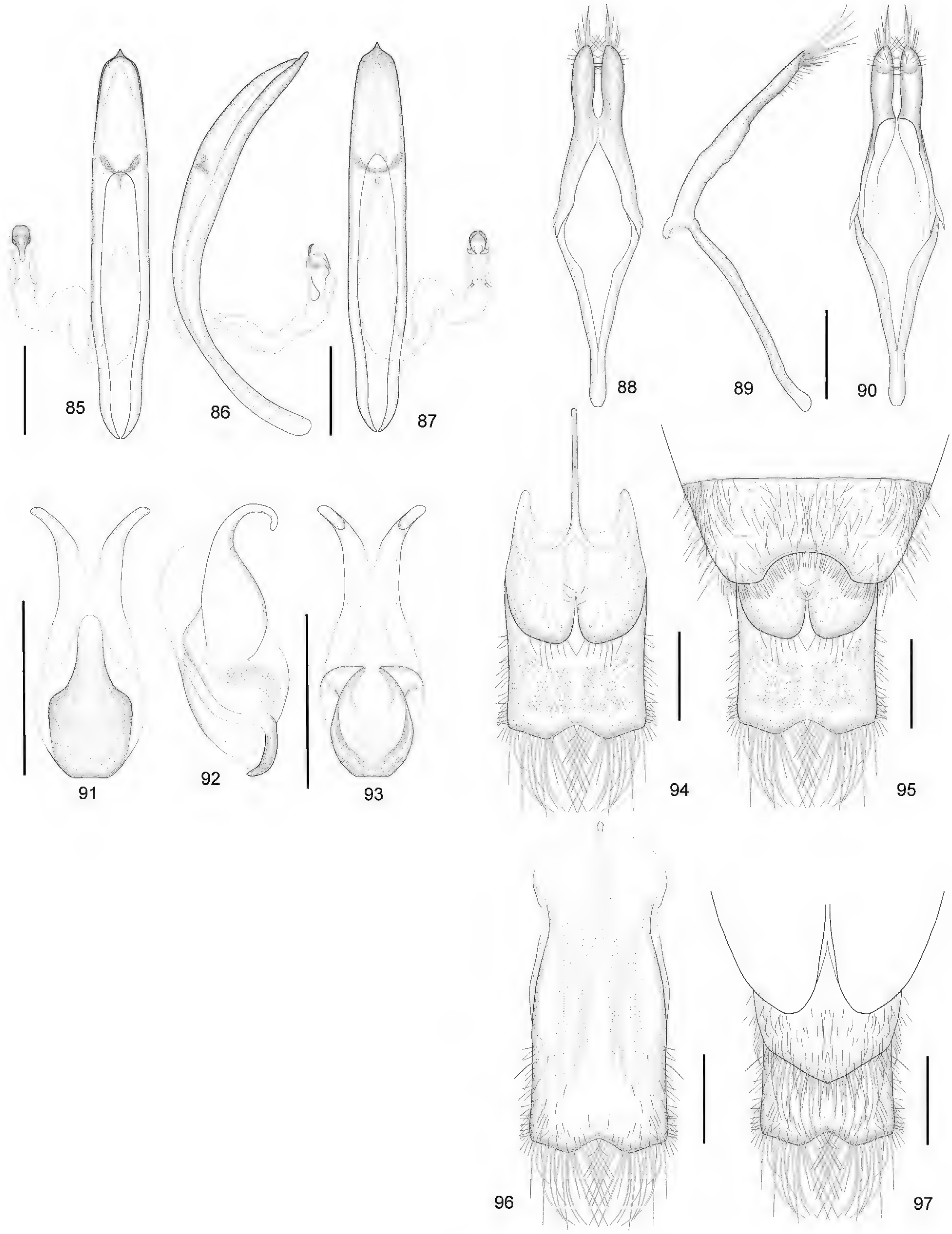
Diatomocephala diversa Pascoe, 1869: 541, type locality: “Menado”.
Ceresium diversum: Aurivillius (1912: 123)
Ceresium diversum: Yokoi (2015: 198)

Material studied: 2♂ & 3♀ CYY: Barana Village, Guadalcanal, Solomon Is. 25-8. II. 2019. Y.Yokoi leg.; 2♂ & 6♀ CYY: same locality but February-March 2020. Local collector leg.; Holotype *Ceresium diversum*, BMNH: Menado / *Diatomocephala diversa Pasc.* / Pascoe Coll. 93-60 / *Diatomocephala diversa*, Type, Pas. Holotype *Ceresium pachymerum*, BMNH: Bouru / *Diatomocephala pachymera,* Type, Pasc. / *Ceresium pachymerum* Pas. / Type.

Additional description: Venter: Prosternum convex, well rounded; with sparse, scattered short, stout, curved hairs pointing in different directions; surface strigulate near apex; the cotyledonary area in the middle coarsely punctured. Prosternal process narrow; well-bordered; moderately declivous toward apex; apex weakly arcuate, thinned in middle. Mesosternum saddle-shaped; though the middle somewhat impressed; steeply elevated toward the process; impunctate. Mesosternal process as in Figs 81–82; broad; clothed with curved, medium-length hairs; intricate in structure; base irregularly elevated; apical part widely bilobed; lobes subrectangular; each lobe with a prominent protuberance. Metasternum subparallel-sided; well convex; shallowly punctured around the narrow median stripe; clothed rather sparsely with fine, whitish hairs elsewhere. Abdomen: Integument as of metasternum. Sternites 3–6 gradually decreasing in length and width. Apex of 7th sternite thickly bordered; subcircularly emarginated. Apex of 7th tergite subtriangularly produced; fringed with medium to long hairs. Male genital organs (Figs 85–93 & 98–103): Median lobe nearly 1/2 the length of abdomen; fusiform in dorsal view; strongly arcuate in profile; dorsal plate dehiscent in basal 2/3; ventral plate longer than the dorsal, dehiscent in basal 7/10, apically produced with a sharp tooth. Tegmen 19/20 the length of median lobe; in profile



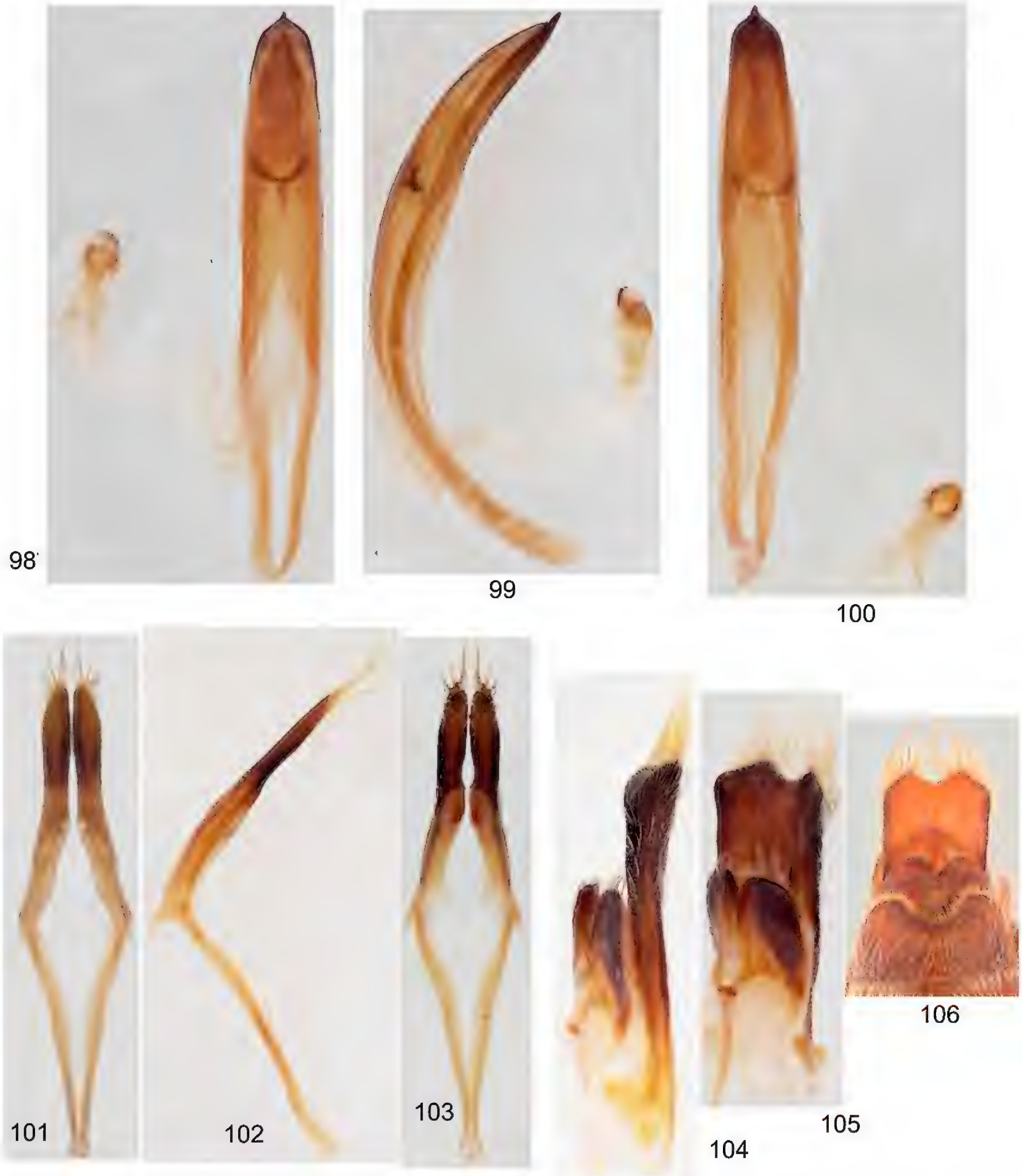
Figures 79–84. Morphology of *Ceresium*. 79–82 – *C. diversum* (Pascoe, 1869) ♂ from Guadalcanal. 79 – Habitus, dorsal view; 80 – ditto, ventral view; 81 – Pro- and mesosternal processes; 82 – Mesosternal process, lateral view; 83 – *C. diversum*, holotype from Sulawesi; 84 – *C. pachymerum* (Pascoe, 1869), holotype from Buru [not to scale].



Figures 85–97. *Ceresium diversum* (Pascoe, 1869), ♂ from Guadalcanal, genitalia and terminalia. 85 – Median lobe with endophallus, dorsal view; 86 – ditto, lateral view; 87 – ditto, ventral view; 88 – Tegmen, dorsal view; 89 – ditto, lateral view; 90 – ditto, ventral view; 91 – Ejaculatory duct complex, dorsal view; 92 – ditto, lateral view; 93 – ditto, ventral view; 94 – Sternite and tergite 8, ventral view; 95 – Sternites 7–8 and tergite 8, ventral view; 96 – Tergite 8, dorsal view; 97 – Tergites 7–8, dorsal view [scale bars for figures 91–93 – 0.5 mm, for figures 85–90 & 94–97 – 1mm].

strongly curved near middle. Parameres about 1/2 the length of tegmen; apical 3/5 bilobed; lobes slender and elongated, each clothed with long hairs on apex and shorter ones on apical sides. Ejaculatory duct complex about 1/6 as long as median lobe. Apical part of apical sclerite dehiscent in dorsal view; in profile strongly curved downward. Both lateral sclerites short, wing-shaped. Basal sclerite thick, stout; horn-shaped in lateral view, bent upward. Membrane of endophallus scaly in parts. Terminalia (Figs 94–97 & 104–106): Blade of 8th sternite bilobed; lobes well rounded; clothed with several short apical hairs; peduncle distinctly shorter than blade. Tergite 8 as broad as the sternite; elongated; parallel-sided; apical margin truncated or weakly emarginated; apical hairs denser, longer.

Differential diagnosis: Mesosternal process of the described species is remarkably structured, with prominent protuberances. This characteristic was observed in varying degrees among the examined specimens. In some examples it is more moderate, in some only rudimentary or not visible. It is thus not stable in the population. It is nevertheless peculiar in the genus *Ceresium*. In the male genitalia, the tegmen of the new species is



Figures 98–106. *Ceresium diversum* (Pascoe, 1869), ♂ from Guadalcanal, genitalia and terminalia. 98 – Median lobe with endophallus, dorsal view; 99 – ditto, lateral view; 100 – ditto, ventral view; 101 – Tegmen, dorsal view; 102 – ditto, lateral view; 103 – ditto, ventral view; 104 – Sternite and tergite 8, lateral view; 105 – ditto, latero-ventral view; 106 – Sternites 7–8 and tergite 8, ventral view [not to scale].

more strongly and abruptly curved in profile than usual for the genus. In contrast, its ejaculatory duct complex is of a type commonly observed in *Ceresium* species. As to terminalia, apices of its sternites and tergites 7th–8th are each characteristic and remarkable. In all, *Ceresium diversum* shares essential characteristics with other species of *Ceresium*. At the same time, it reveals remarkable peculiarities hitherto unobserved in the genus.

Distribution: East Java, Bali, Lombok, Sulawesi, Guadalcanal (first record for the Solomon Islands).

***Oxymagis horni* (Heller, 1912)** (Figs 107–134)

Macroceresium horni Heller, 1912
Oxymagis vitticollis (Fairmaire, 1883): Gressitt (1959: 113)
Oxymagis horni: Hawkeswood & Dauber (2001: 313)
Oxymagis horni: Hawkeswood & Dauber (2003: 416)

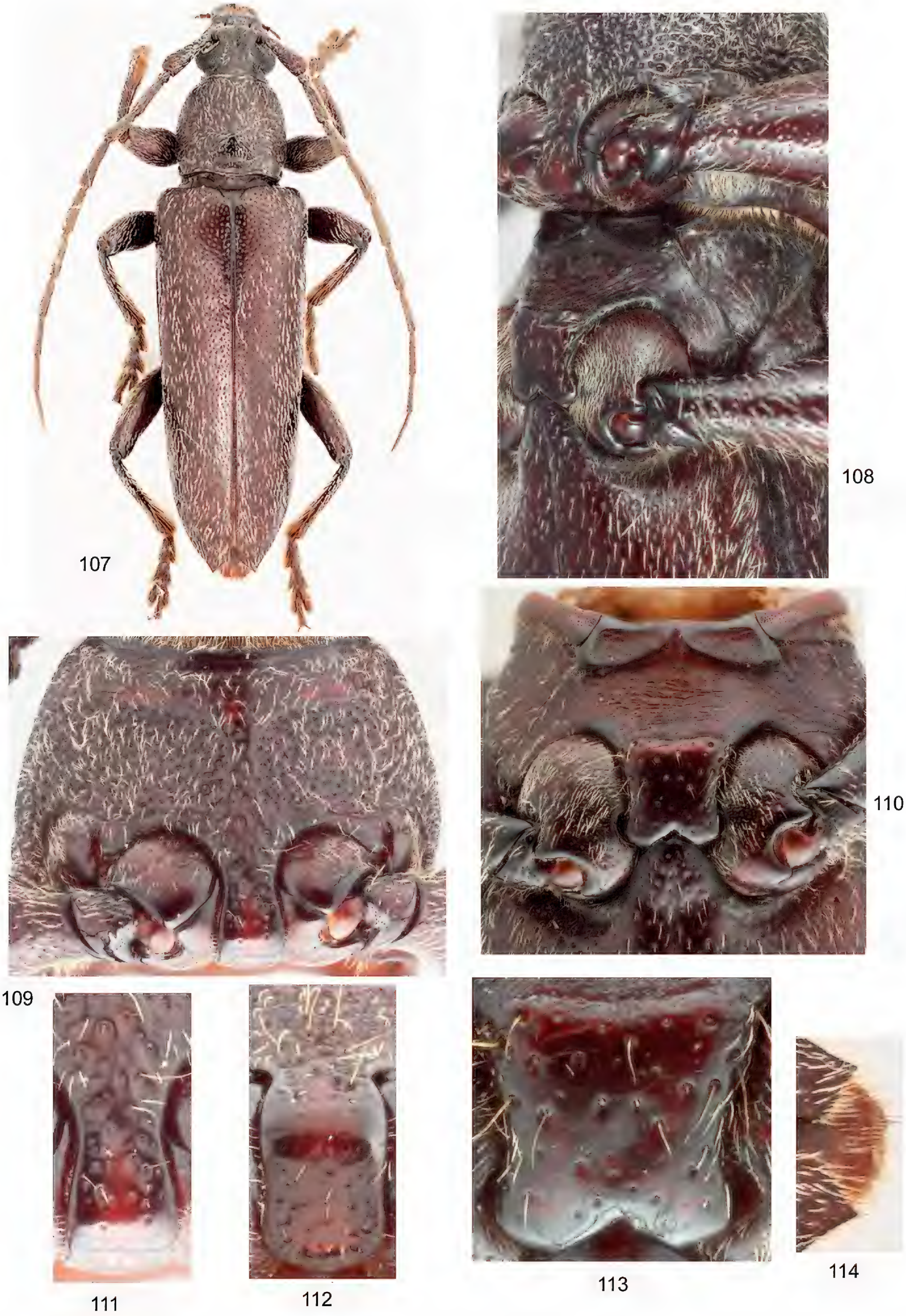
Material studied: 2♂ CYY: Barana Village, Guadalcanal, Solomon Is. April 2019. Local collector leg.

Additional description: Venter (Figs 108–113): Prosternum convex; well rounded; irregularly clothed with short, stout, curved, adpressed hairs; the extensive cotyledonary area in middle weakly impressed and densely punctured; punctures near the process larger. Prosternal process broad; thickly bordered; surface glossy, uneven, with several large punctures near base and smaller ones elsewhere; sporadically clothed with short hairs; apical 1/3 abruptly, subvertically bent downward; apical margin arcuate. Mesosternum saddle-shaped; steeply elevated toward the process; the middle strigulate on surface. Mesosternal process broad; flattened, feebly impressed in middle; glossy; with several punctures and hairs; apex triangularly emarginated. Mesocoxal cavities closed externally. Metasternum subparallel-sided; glossy; with sparse small setiferous punctures; setae thereof short, stout, adpressed. Abdomen clothed with short, adpressed hairs; nitid in middle: sternites 3–6 gradually decreasing in length and width. 7th sternite longer than the preceding, apically narrowed; apex truncated. Male genital organs (Figs 115–121 & 128–133): Median lobe 1/2 the length of abdomen; elongated-bullet-shaped in dorsal view; moderately arcuate in profile. Dorsal plate dehiscent in basal 3/5. Ventral plate longer than the dorsal; dehiscent in basal 3/4; apical part in ventral view subcircularly rounded, with a sharp tooth at the top; impressed twice, first direct at apex and second a little further; in profile bi-sinuate. Tegmen 9/10 the length of median lobe; narrow; in profile moderately arcuate. Parameres about 1/2 the length of tegmen; sides slightly emarginated; apical 2/5 bilobed. Lobes each fringed with a row of long hairs on sides; apex clothed with several long hairs; underside with short, stout, curved hairs; dorsum coarsely punctured. Basal part of endophallus thick, leathery; in natura multiply folded in close wrinkles (Figs 128 & 131). Ejaculatory duct complex about 1/5 the length of median lobe. Apical sclerite prominent; horn-shaped; supplemented by a large, weakly sclerotized, pincer-like appendage. Both lateral sclerites wing-shaped; directly contiguous to basal sclerite. Basal sclerite thick, monolithic; supplemented by a subsclerotized membrane structure. Terminalia (Figs 122–127 & 134): Blade of 8th sternite transverse; sides and apex widely rounded; apical half more or less with setiferous punctures; setae thereof short and stout; apex fringed with longer hairs; peduncle a little longer than blade. Tergite 8 similarly broad as blade of the sternite; longer; apical half well rounded; apical margin obtusely emarginated, clothed by hairs of medium length; dorsal side with setiferous punctures bearing stout hairs; ventral side densely granulate-punctate near apex. Sternite 9 (spiculum gastrale) with a pair of prominent protrusions at the bifurcation, each with several long, stout apical hairs (Figs 123–127 & 134).

Differential diagnosis: The genitalia of this species is remarkable. Intrinsic apical structure of its median lobe, lateral setae on parameres of tegmen, integument on 8th sternite and tergite are peculiar in the genus. Above all, its 9th sternite (spiculum gastrale) is singular. It has a prominent projection with setae at the bifurcation. Further, the endophallus is noteworthy, as its basal part is thick, leathery, and *in natura* tightly folded within median lobe. In contrast, the ejaculatory duct complex of its endophallus is of a commonly observed type. In all, the genitalia of *Oxymagus horni* belongs essentially to the same type as of the *Ceresium* and the related genera in the Callidiopini, so far as ejaculatory duct complex is concerned. In other aspects it is obviously distinct.

Distribution: Papua New Guinea (East Sepik, Northern Solomon Province), Guadalcanal (first record from the Solomon Islands).

Remarks: Gressitt (1959) erroneously synonymized this species with *Oxymagis vitticollis* (Fairmaire, 1883), which was corrected by Hawkeswood & Dauber (2001; 2003). It was originally described from New Britain Island of Bismarck Archipelago, which now politically belongs to Papua New Guinea. In other previous publications, distribution in “Solomon Islands” was



Figures 107–114. *Oxymagis horni* (Heller, 1912), ♂ from Guadalcanal. 107 – Habitus, dorsal view; 108 – Venter, lateral view; 109 – Prosternum; 110 – Mesosternum; 111 – Prosternal process, ventral view; 112 – ditto, vertical part; 113 – Mesosternal process; 114 – Elytral apices [not to scale].

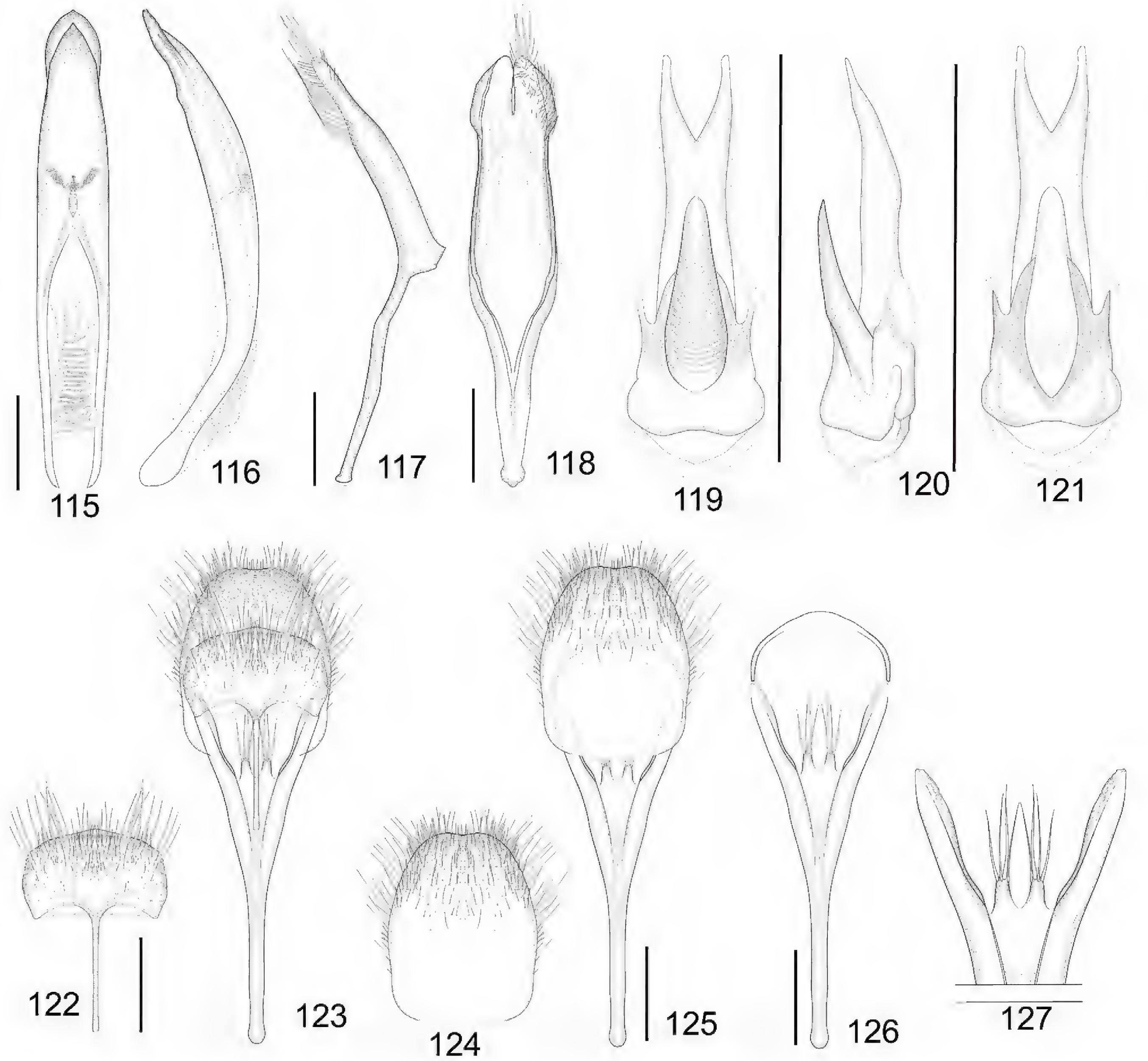
referred to, without the precise location specified. The distribution in Guadalcanal Is., Solomon Is., is hereby confirmed. *Oxymagis horni* is known as a pest of cocoa trees in various subtropical and tropical regions. A harmful outbreak in the "Northern Solomon Province in Papua New Guinea" was already reported 1984 (E. Smith 1985). As cocoa is cultivated on Guadalcanal Island, it cannot be excluded that this species was artificially imported there.

***Dendrides solomonicus* sp. nov.** (Figs 135–142, 148 & 156–157)

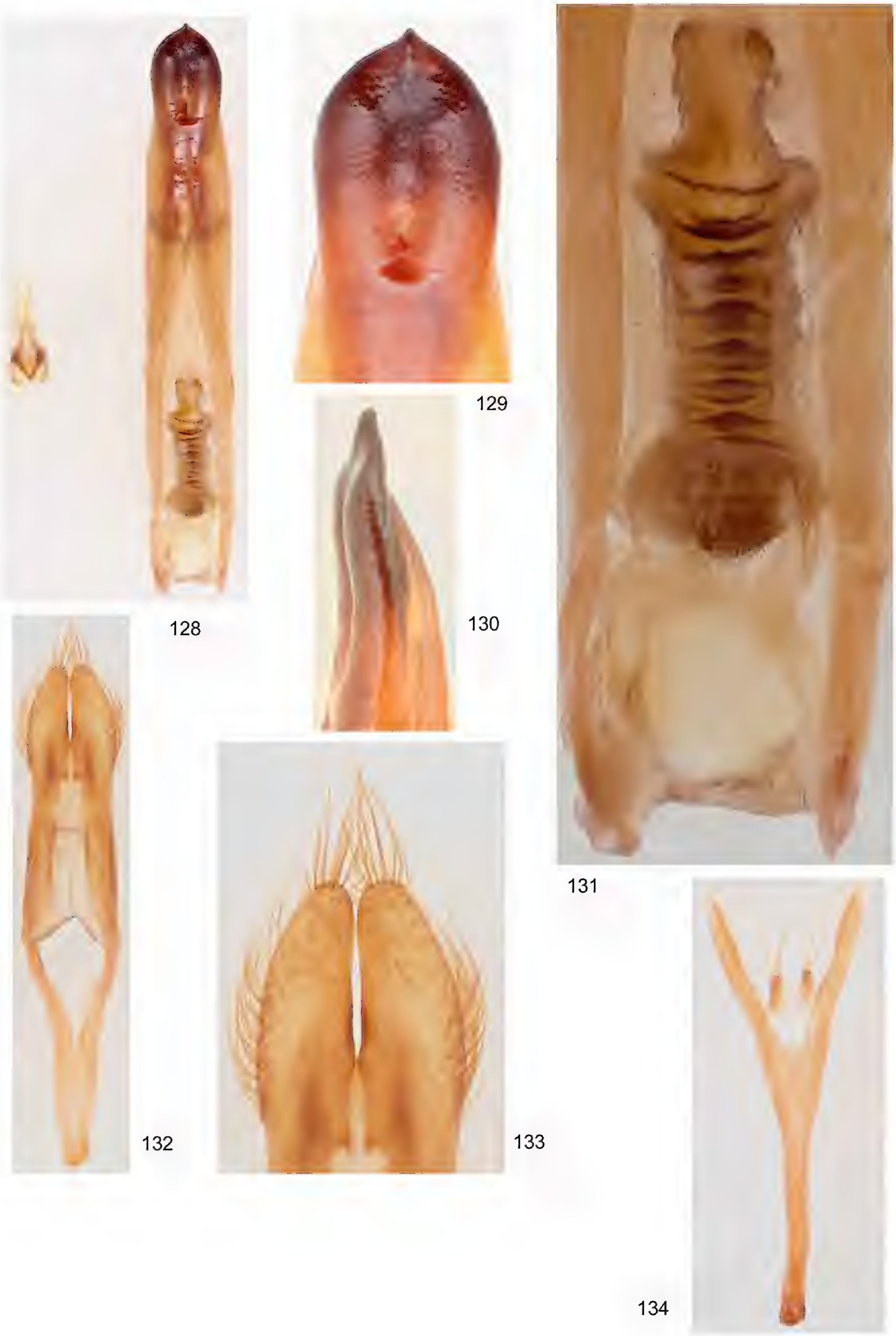
Holotype ♀ NSMT-I -C-200342: Solomon Is., Guadalcanal, Barana Village. 25-28. II. 2019. Y.Yokoi. leg.

Derivatio nominis: The name of this species refers to its distribution.

Diagnosis: Medium-sized. Robust. Pronotum distinctly transverse. Antennomeres 3–7 spinose. Elytral apices broadly emarginated.



Figures 115–127. *Oxymagis horni* (Heller, 1912), ♂ from Guadalcanal, genitalia and terminalia. 115 – Median lobe, dorsal view; 116 – ditto, lateral view; 117 – Tegmen, lateral view; 118 – ditto, ventral view; 119 – Ejaculatory duct complex, dorsal view; 120 – ditto, lateral view; 121 – ditto, ventral view; 122 – Sternite 8, ventral view; 123 – ditto, with tergite 8 and sternite 9 (spiculum gastrale) in the background; 124 – Tergite 8, dorsal view; 125 – ditto, with spiculum gastrale in the background; 126 – Spiculum gastrale, ventral view; 127 – ditto, apical part, enlarged [scale bars: 1mm].



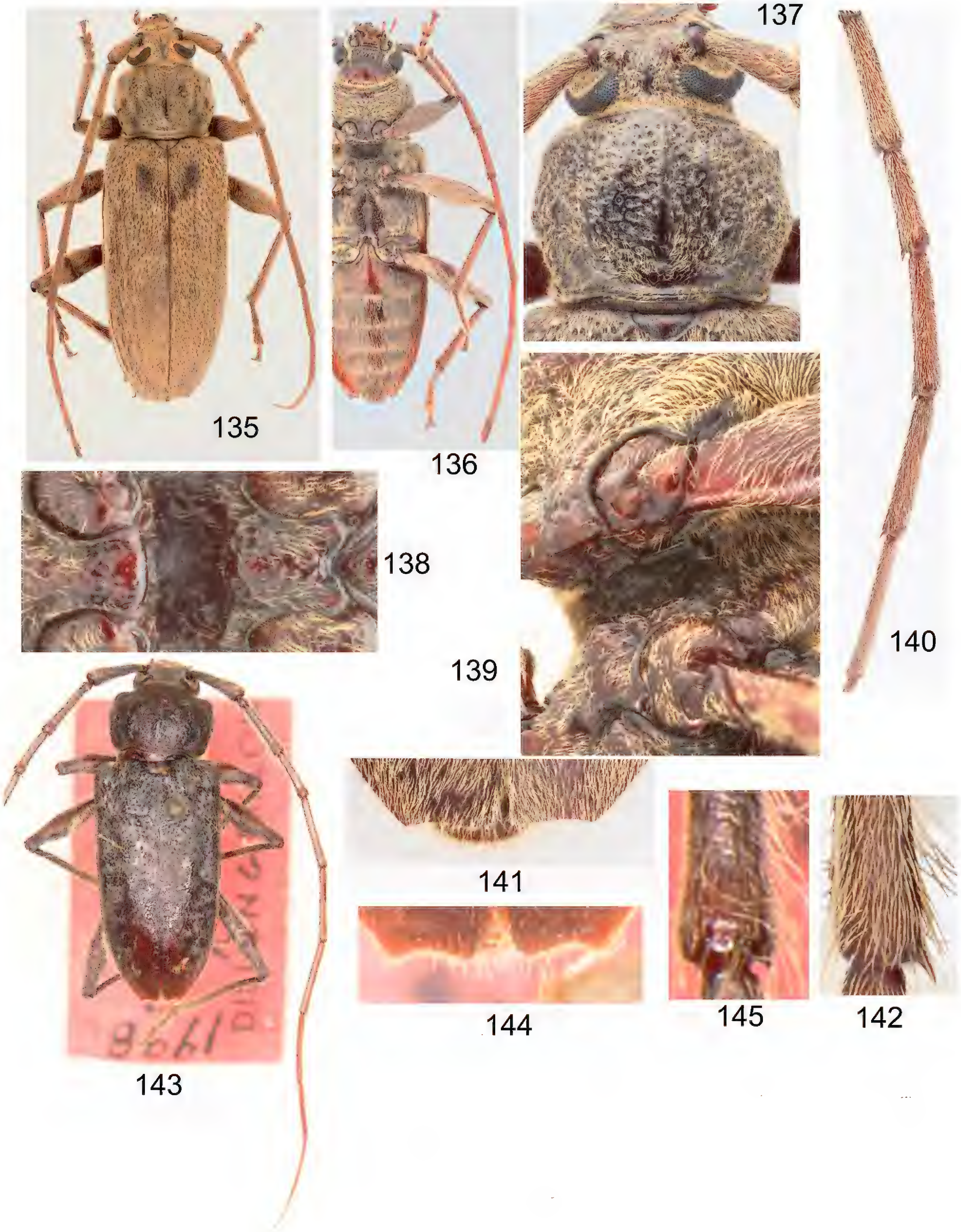
Figures 128–134. *Oxymagis horni* (Heller, 1912), ♂ from Guadalcanal, genitalia and terminalia. 128 – Median lobe with endophallus, ventral view; 129 – ditto, apex; 130 – ditto, lateral view; 131 – Endophallus in median lobe; 132 – Tegmen, dorsal view; 133 – ditto, apex; 134 – Sternite 9 (spiculum gastrale), ventral view [not to scale].

Measurements: TL=20.5 mm; EL/EW=2.1; HW/PW=0.68; PL/PW=0.74; PA/PW=0.6; PB/PW=0.8.
Description: Colour dark brown to blackish. Antennae, legs and abdomen reddish brown. Setae yellowish. Head: Distinctly narrower than pronotum; sparsely and shallowly punctured: rather sparsely clothed with short, stout, curved hairs. Frons transverse; subrectangular; moderately declivous; transversely, arcuately impressed in middle; with a pair of deep lateral cavities. Vertex widely concave; with a rudimentary median furrow. Eyes deeply emarginate; separated from one another by 2/5 the width of occiput or 5/2 of the upper eye-lobes. Antennal supports flattened. Antennae surpassing elytral apices by 10th article. Antennomeres 3, 4, 5, 6, 7 each 11/10, 5/6, 6/5, 6/5, 6/5 as long as scape; the remaining articles gradually reducing in length; Antennomeres 3–6 distinctly spinose; 7 subspinose. Scape moderately arcuate and clavate; clothed with short, fine, adpressed hairs. Pronotum (Fig. 137): Distinctly transverse; strongly constricted just before apex; apex thus narrower than base. Surface uneven; irregularly, deeply, coarsely punctured; densely clothed with minute, adpressed hairs pointing in different directions. Sides unevenly inflated with irregular swellings and depressions; the largest swelling just before the apical constriction. Disc subcircularly surrounded by irregular elevations; with a narrow, clavate median costa. Scutellum short and broad, subtriangular; haired as pronotum. Elytra: Broad; punctures shallow, decreasing in size toward apices; rather densely clothed with short, fine hairs. Sides subparallel from basal 1/5 to 1/2, then arcuate to apices. Apices broadly emarginated; obtusely bi-dentate. Disc rounded; though subcircularly elevated and flattened just behind scutellum. Legs: Moderate in length; hind femora reaching the apex of 5th sternite; femora moderately clavate from base on. Venter: (Figs 136 & 138–139). Prosternum convex, well rounded, voluminous; coarsely punctured; thickly clothed with short adpressed hairs. Prosternal process broad; surface uneven; coarsely punctured; apical 1/3 abruptly subvertically, bent downward; apex weakly emarginated. Procoxal cavities widely opened posteriorly. Mesosternum saddle-shaped; steeply elevated toward the process; with several large punctures. Mesosternal process broad; with irregular setiferous punctures; apex broadly emarginated; apical margin contiguous at the same level to the basal projection of metasternum. Mesocoxal cavities closed externally. Metasternum distinctly transverse; punctate on each side of the median stripe. Abdomen: Shiny; impunctate; sternites 3–7 gradually decreasing in length and width; 7th broadly emarginated on apex. Female genital organs (Figs 148 & 156–157): Blade of 8th sternite subsquarish, though the basal half narrowed posteriorly; widely thinned in middle; apices fringed with setae of various lengths; peduncle elongated, about 10/3 as long as blades. Tergite 8 squarish; apical hairs similar to those of the sternite. Abdominal segment 9 rather long; coxite as long as paraproct. Vagina with a pair of arcuate flagella near median oviduct. Bursa copulatrix large; contiguous to the apical vagina; with a pair of small sclerites near base. Spermatheca kidney-shaped; membrane subsclerotized near base and apex; connected to bursa copulatrix by a long, winding tube.
Differential diagnosis: The spinose antennae of the new species is reminiscent of the tribe Phoracanthini. In other aspects, however, it does not resemble any species of the tribe. It is rather comparable to *Dendrides pallidus* Dillon et Dillon, 1952 (Figs 143–145). Both species share similar structures of body, pronotum, legs and elytra, differing more in details such as punctures and setae. However, the new species differs obviously by the spinose antennomeres 3–6. It is the second member of this rather seldom observed genus. It should be added that the venter of this new species is somewhat similar to that of *Oxymagis horni* (Heller, 1912) as described above, particularly regarding the subvertical apex of prosternal process. For further taxonomic consideration, see Discussion.
Distribution: Guadalcanal, Solomon Islands.

Discussion

Ceresium gracilipenne sp. nov. and related species

It is remarkable that *Ceresium gracilipenne* sp. nov. is similar to *Examnes dimorpha* Gressitt, 1951 from Vanuatu (formerly New Hebrides). In fact, the body structure as a whole is comparable. The new species can be distinguished from the latter by the different coloration and reticulate surface of the head and pronotum. It indeed shares the steeply declivous frons with *E. dimorpha* and other *Examnes* species. The question arises if it should be also classified as *Examnes*. However, it differs from *Examnes* species in several essential aspects. Compared to *Examnes philippensis* (Newman, 1842), the type species of the genus



Figures 135–145. Species of *Dendrides*. 135–142 – *D. solomonicus* sp. nov., holotype ♀: 135 – Habitus, dorsal view; 136 – ditto, ventral view; 137 – Pronotum; 138 – Pro-and mesosternal processes; 139 – ditto, lateral view; 140 – Antennomeres 3–7; 141 – Elytral apices; 142 – Third antennomere; 143–145 – *D. pallidus* Dillon et Dillon, 1952, holotype ♂: 143 –Habitus, dorsal view; 144 – Elytral apices; 145 – Antennomere 3 [not to scale].

Examnes, the new species is much smaller and more slender, its antennae much shorter, its antennal supports flattened, pronotal surface reticulate instead of unevenly punctate, and finally, prosternal process distinctly narrower. Thus, the differences from *Examnes* species by far outweigh the single characteristic of the frons that they have in common.

At the same time, the slender body of the new species and its long, very sparse, flying hairs on pronotum and abdomen are rather reminiscent of *Stenodryas,* another genus related to *Ceresium*. The new species differs, however, in other essential aspects such as structure of pronotum and legs.

Regarding genitalia, this new species is basically similar to those of *Ceresium* or of related genera *Examnes* and *Stenodryas*. In contrast, it has unique male terminalia and female abdomen.

In all, the new species is best placed in the genus *Ceresium*, though differing in several important aspects such as the steep frons, long flying hairs, peculiar male terminalia and female abdomen. It is described as *Ceresium* in this publication.

The taxonomic inter-relationship of the three genera *Ceresium*, *Examnes* and *Stenodryas* has already been discussed in previous publications (Yokoi 2019; Yokoi *et al*. 2019). Species embracing characteristics of these different genera were already described there. This new species is another example of such a species.

External characteristics analogous to those of the new species are also observed for *C. gracilipes*, *C. decorum, C. promissum* and *C. huedepohli.* They are small, brownish-yellowish in colour. Their bodies, antennae and legs are slender. Their pronotal surfaces are regularly and finely punctured, mostly even, without lateral callosities. In this respect, the above compared *Examnes dimorpha* is also similar. These smaller species from the Australian Region probably constitute a coherent group, though not homogenous. In this connection, it is noteworthy that these external characteristics are also commonly shared by species of the subgenus *Ceresiellum*, including *Ceresium* (*Ceresiellum*) *olidum* (Fairmaire, 1881), *C. (C.) usingeri* Gressitt, 1956 and *C. (C.) planatum* Gressitt, 1956. Further, some species from the genus *Araespor* Thomson, 1878 should also be considered. They also share some of the above-mentioned characteristics. However, the tribal position of *Araespor* must first be clarified, as it was placed in the Achrysonini by Aurivillius (1912) but Gressitt (1959) rightly questioned this, and tentatively included it in the Callidiopini.

The taxonomic positions of these genera and subgenera should be carefully considered further. Genitalia and terminalia of the species concerned, in particular those of the type specimens, should be examined.

Remarkable genitalia of *C. pulekerai* sp. nov.

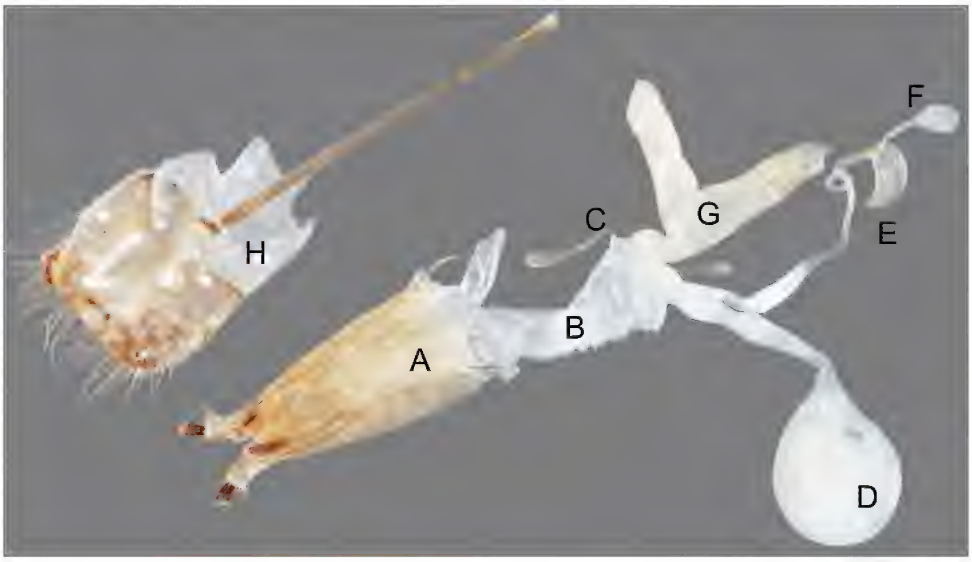
The genitalia of this new species is unique within the genus *Ceresium*. First, the median lobe is unusually arcuate and slender. It is the slenderest among the hitherto observed species of the genus, only the median lobe of *Ceresium detanii* Yokoi, 2015 is nearly comparable. Second, the peculiar apical projection of the ventral plate has not been observed before in *Ceresium*. Third, the parameres of tegmen are unusually long and parallel-sided. It is proportionally by far the longest in the genus. Finally, the median lobe is much more extensively and congruently embraced by tegmen than usual.

As to the endophallus of the new species, the presence of a similarly sclerotized ejaculatory duct complex indicates a fundamental affiliation with *Ceresium* or with the related genera. The complex is, however, exceptionally small. Usually, the length of the complex relative to the median lobe varies from 1/4 to 1/3, reducing to 1/8 in an extreme case. It is 1/20 in case of the new species, an extraordinary small figure. Furthermore, the extensively scaly surface of endophallus is unique within the genus *Ceresium*.

Thus, the male genitalia of the new species are exceptional in the genus. At the same time, its male terminalia, as described and illustrated above, is also unique. Regarding the taxonomy of the new species, the genitalia and terminalia are almost distinct enough to justify the introduction of a new subgenus or a new genus. In contrast, the external characteristics of the new species as a whole are less remarkable. Though the inflated pronotum with peculiar puncturation and the structure of mid-tibiae are unusual, other characteristics are rather commonly observed in *Ceresium* species. The difference in external characteristics seems thus less conclusive. More related species need to be discovered and observed.

Ceresium hurutataui sp. nov. and *Ceresium pulekerai* sp. nov.

Endophallus of *C. hurutataui* sp. nov. is also scaly or thickened on the surface, though to a lesser extent than that of *C. pulekerai* sp. nov.



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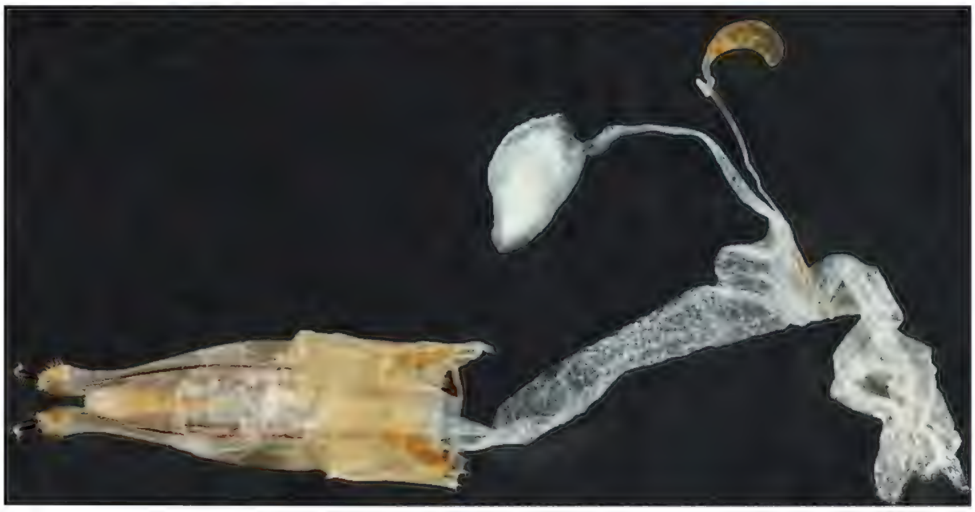
A, 9th sternite;
B, vagina;
C, vaginal plates;
D, bursa copulatrix;
E, spermatheca;
F, spermathecal gland;
G, median oviduct;
H, 8th sternite, ventral view.



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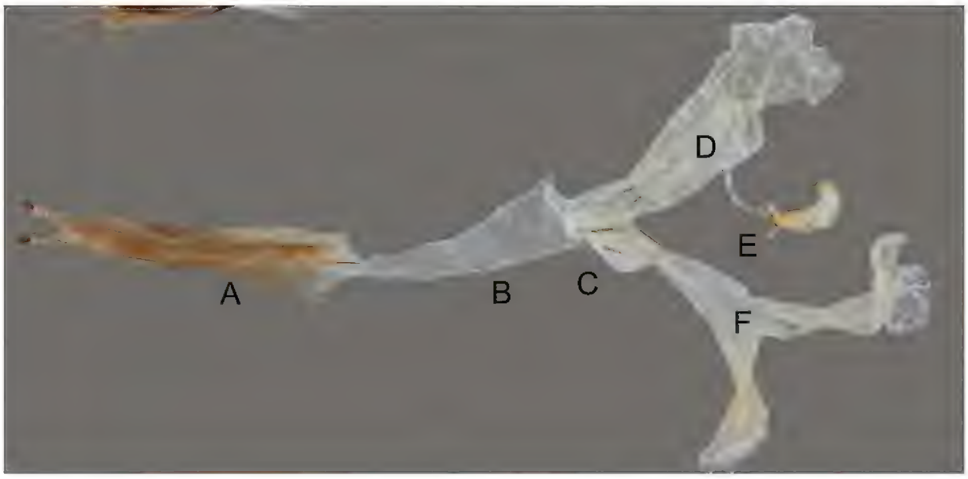
Far left: 9th sternite.
Clockwise from bottom:
vagina with vaginal plates;
bursa copulatrix;
spermatheca;
medianoviduct.



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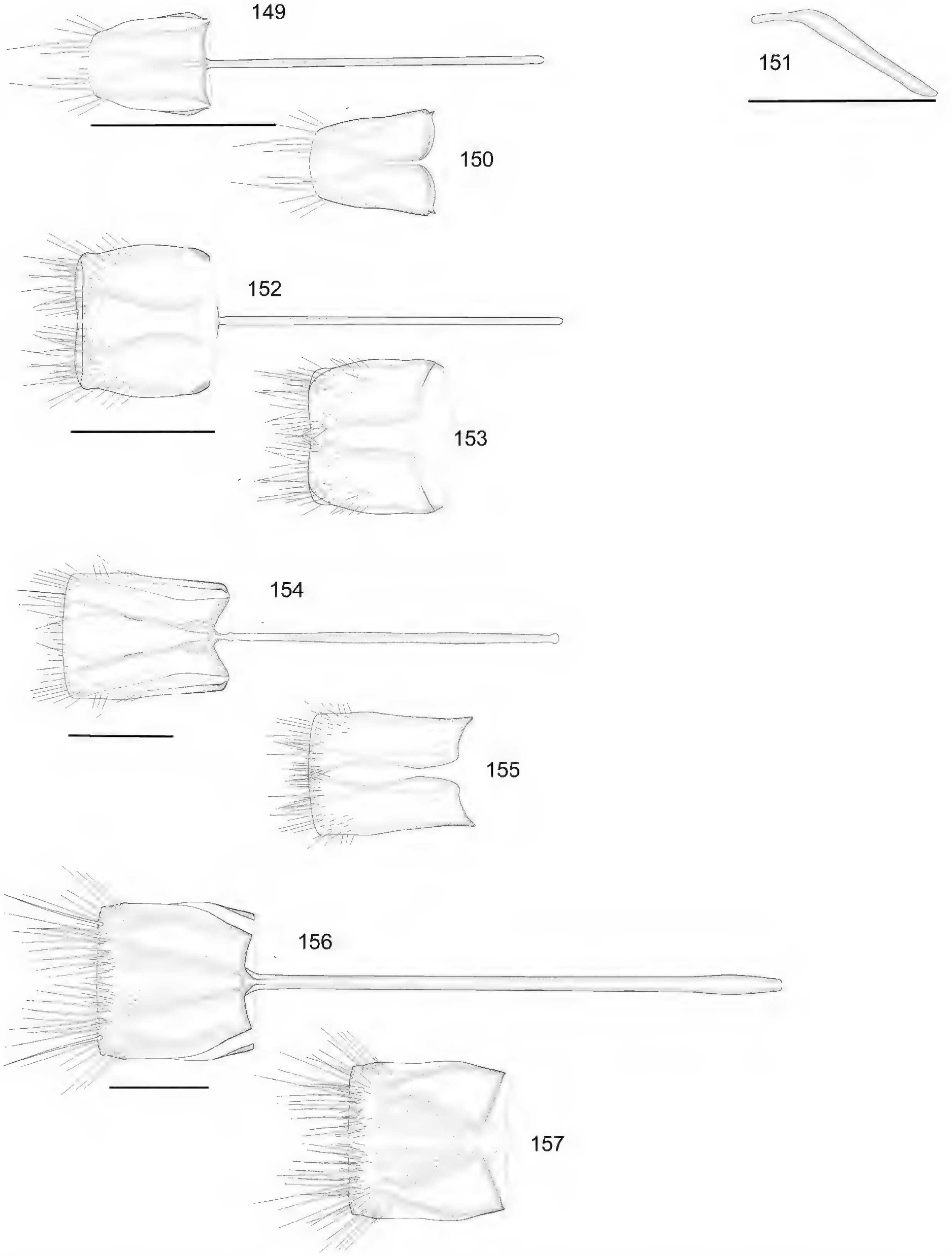
A, 9th sternite;
B, vagina;
C, vaginal plates;
D, bursa copulatrix;
E, spermatheca;
F, median oviduct.

Figures 146–148. Female copulatory apparatus of Callidiopini. 146 – *Ceresium perplexum* sp. nov., holotype ♀: A – Sternite 9; B – Vagina; C – Vaginal plates; D – Bursa copulatrix; E – Spermatheca; F – Spermathecal gland; G – Median oviduct; H – Sternite 8, ventral view; 147 – *Ceresium mirabile* sp. nov., holotype ♀: Far left, 9th sternite; clockwise from bottom – Vagina with vaginal plates; Bursa copulatrix; spermatheca; Median oviduct; 148 – *Dendrides solomonicus* sp. nov., holotype ♀: A – Sternite 9; B – Vagina; C – Vaginal plates; D – Bursa copulatrix; E – spermatheca; F – median oviduct [not to scale].



Figures 149–157. Female copulatory apparatus and terminalia of Callidiopini. 149–151 – *Ceresium gracilipenne* sp. nov., paratype ♀: 149 – Sternite 8, ventral view; 150 – Tergite 8, dorsal view; 151 – Vaginal plate; 152–153 – *Ceresium perplexum* sp. nov., paratype ♀: 152 – Sternite 8, ventral view; 153 – Tergite 8, dorsal view; 154–155 – *Ceresium mirabile* sp. nov., paratype ♀: 154 – Sternite 8, ventral view; 155 – Tergite 8, dorsal view; 156–157 – *Dendrides solomonicus* sp. nov., paratype ♀: 156 – Sternite 8, ventral view; 157 – Tergite 8, dorsal view [scale bars for figures 148–149 & 151–154 – 1 mm, for figure 151 – 0.4 mm].

above. It is noteworthy that the endophalli of these two sympatric species are similar in this regard. Their ejaculatory duct complexes are also similar in design. However, the complex of the latter is peculiarly small, while that of the former is one of the largest in the genus. The male terminalia, 8th sternite and tergite of the two species, differ in structure, but both are unique within the genus. Regarding genitalia and terminalia as a whole, both species differ obviously from the Oriental species of *Ceresium* or related genera.

Taxonomical questions regarding *Ceresium perplexum* sp. nov. and *Ceresium mirabile* sp. nov.

These two new species, from Solomon Is. and from New Guinea respectively, differ in several significant aspects. They are, however, essentially similar in body structure. The coloration patterns are analogous, differing in details. They are also similar regarding female genitalia, while differing in terminalia. Both of them reveal, in turn, a few external characteristics which are not typical of *Ceresium* but rather reminiscent of neighbouring genera. The nitid, impunctate, subtrapezoidal pronotum of *Ceresium perplexum* sp. nov. is more similar to those of *Stenodryas* species, while that of *Ceresium mirabile* sp. nov. is more similar to those of typical *Ceresium* species. In contrast, the legs of the former are unremarkable, while those of the latter are not typical of *Ceresium*. The slender, only feebly clavate fore-femora of the latter are rather reminiscent of species of *Salpinia* Pascoe, 1869. Finally, the emarginated elytral apices of the latter are seldom observed in *Ceresium* or related genera. Only the sympatric *Ceresium emarginatum* Yokoi, Makihara et Woro, 2019 shares this characteristic. Both new species are again examples of taxa embracing characteristics of different genera. For further consideration, more comparisons of their male genital organs are necessary. The two new species are described here in the genus *Ceresium*.

Ceresium diversum / *Ceresium pachymerum*

There seems to be an ambiguity as to the distinction between *Ceresium diversum* (Pascoe, 1869), originally described from Sulawesi, and *Ceresium pachymerum* (Pascoe, 1869) from Buru and Seram. According to the original descriptions, the differences essentially concern coloration and the form of the pronotum, elytra and legs. However, these differences are mostly of gradual nature. Comparison of the holotypes, both female, does not show any clear distinction. Although some differences can be recognized, such deviations can also be observed in different geographical populations of each species. Even within a sympatric population, similar deviations can be commonly observed. The changeable nature of their external characteristics is, for example, underlined by the observation regarding the peculiar mesosternal process, described above for *Ceresium diversum*.

According to the records, *C. pachymerum* is widely distributed in the Papuan Region, while *C. diversum* is recorded from more western regions (Yokoi 2015). In this sense, the record of *C. diversum* from Solomon Islands is rather isolated. However, the population from there, as described above, resembles as a whole rather the holotype of *C. diversum* than of *C. pachymerum*. It is thus identified as *C. diversum* in this publication.

The relationship of these two species should be treated separately in another publication, as it will involve examination of male genitalia of more specimens from various regions, and is beyond the scope of this publication.

Taxonomic position of genus *Oxymagis*

The endophallus of this species has a strongly sclerotized ejaculatory duct complex, like that of *Ceresium*, *Examnes* or *Stenodryas* species. In fact, *Oxymagis* is the fourth genus in the Callidiopini to be observed with this type of endophallus. In comparison, such a complex is absent in the nominotypical genus *Callidiopsis* or other genera of the Callidiopini such as *Salpinia*. This observation indicates that *Oxymagis* should be affiliated with the three genera above, *Ceresium*, *Examnes* or *Stenodryas* of the Callidiopini.

In contrast, other parts of the genitalia differ obviously from those of the three genera above. Its 9th sternite (spicum gastrale), which has a peculiar prominent projection, is above all remarkable.

Tribal position of the genus *Dendrides*

In a formalistic point of view, *Dendrides solomonicus* sp. nov. should be classified as a species of the tribe Phoracanthini, on account of its spinose antennomeres. However, it does not resemble any of the species of the tribe in other essential aspects. In particular, its strongly transverse pronotum, in combination with broadly emarginated elytral apices, has no equivalence in the Phoracanthini.

Instead, the new species shares essential characteristics with *Dendrides pallidus* Dillon et Dillon, 1952 (Figs 143–145). It is noteworthy, however, that the antennae of *D. pallidus* are not so spinose as of the new species, but its 3rd antennomere nevertheless has a tooth or tubercle (Fig. 145). The essential difference between these two species is thus relative, which in turn supports that the genus *Dendrides* could indeed include species with spinose antennomeres.

The tribal position of the genus *Dendrides* is not yet determined. Dillon & Dillon (1952), who described the genus, noted themselves that it was impossible to place this genus in a tribe. For the final classification, male genital organs of the relevant species must be compared. At present, the similarity of the pro- and mesosternum, in particular the processes, with *Oxymagis horni* should be noted.

The new species is described here in the genus *Dendrides*, temporarily without tribal classification.

Male genitalia and terminalia

It was again observed that the endophallus of *Ceresium* species have an intricate, heavily sclerotized ejaculatory duct complex at the apex, which is characteristic for the species (Yokoi 2019; Yokoi *et al*. 2019). In addition, it was shown that a species of the genus *Oxymagis* has a similar type of endophallus. Thus, *Ceresium*, *Examnes*, *Stenodryas* and *Oxymagis* of the tribe Callidiopini are similar regarding this important part of genitalia.

It is noteworthy that the endophalli of *C. pulekerai* sp. nov. and *C. hurutaraui* sp. nov., both from Guadalcanal, are very scaly. It has not been observed for the Oriental species of the genus before. A scaly or thickened endophallus is more commonly observed in Callidiopini in other genera such as *Callidiopsis* Thomson, 1864 or *Salpinia* Pascoe, 1869.

The terminalia of the genera examined are diverse and characteristic, as observed in previous publications (Yokoi 2019; Yokoi *et al*. 2019). In addition, it was observed that the apices of the 7th abdominal segments, both sternite and tegrite, sometimes exhibit interesting structures, as in the case of *C. pulekerai* sp. nov. or *C. diversum*.

The 9th sternite (spiculum gastrale) of *Oxymagis horni* is unique in structure. The prominent protrusion with stout setae has not been observed before in the tribe. The function of this peculiar structure and its hairs is unknown.

Remark: Endophalli of *Callidiopsis* and *Salpinia* are described in a parallel publication (Yokoi, in press).

Female genitalia and terminalia

Female genitalia of the four species examined are in general not as characteristic as the male genitalia. Vaginae, bursae copulatrix and median oviducts are composed of membranes, susceptible to deformation. Substantial characteristics which are stable enough were observed solely for the spermathecae and vaginal plates. Their 9th abdominal segments are admittedly more stable. They are, however, often similar, differing mainly in their relative length. In contrast, the 8th abdominal segments of these four species show substantial differences in structure. For example, *C. perplexum* sp. nov. and *C. mirabile* sp. nov., while resembling each other in general, differ obviously in the structure of 8th sternite and tergite.

Concluding remark

The above described species have revealed interesting morphologies of genitalia as well as of external characteristics, many of which are observed for the first time in the Callidiopini. Several new questions must thus be considered. Five new species of the genus *Ceresium,* i.e. *C. gracilipenne* sp. nov., *C. pulekerai* sp. nov., *C. hurutaraui* sp. nov., *C. perplexum* sp. nov. and *C. mirabile* sp. nov. differ substantially from most species of the Oriental Region. Their taxonomic positions within the genus or the tribe must be further examined. In addition, the tribal position of the genus *Dendrides* must be determined. Even the two known species, *C. diversum* and *Oxymagis horni*, have peculiar characteristics that merit more detailed taxonomic consideration in future.

Further observations need to include more comparisons of male genitalia, which could provide an important character system for classification. Previous examinations of genitalia and terminalia, including those of relevant type specimens, have not been sufficient. Regrettably, many male specimens of pivotal species are still not available to the author. In this sense, contributions by colleagues on genitalia, the male endophallus in particular, are welcome.

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